

# **MISSOURI HIGHWAYS and TRANSPORTATION COMMISSION**

**JEFFERSON CITY, MISSOURI**

**SUPPLEMENTAL PLANS TO JULY 2022 MISSOURI STANDARD  
PLANS FOR HIGHWAY CONSTRUCTION**

**EFFECTIVE January 1, 2023**

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MISSOURI STANDARD PLANS FOR HIGHWAY CONSTRUCTION

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EFFECTIVE: 01/01/2023

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203.02F	UNDERGRADING – TYPICAL DETAILS	2	01/01/2004
203.10D	TABULATED EARTHWORK AND SECTION DATA	1	02/01/2009
203.20G	SUPERELEVATION, SPIRALS AND WIDENING (UNDIVIDED HIGHWAY)	4	07/01/2017
203.21K	SUPERELEVATION, SPIRALS AND WIDENING (DIVIDED HIGHWAY)	3	07/01/2017
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413.20	SCRUB SEAL BROOM CONFIGURATION	1	07/01/2004
502.05R	CONCRETE PAVEMENT AND BASE APPURTENANCES FOR 15 FT. JOINT SPACING *	4	10/01/2022
502.10K	DOWEL SUPPORTING UNITS	2	06/01/2010
504.00L	CONCRETE APPROACH PAVEMENT *	3	10/01/2022
506.20	BIG BLOCK UNBONDED CONCRETE OVERLAY	1	07/01/2021
602.00D	RIGHT-OF-WAY AND DRAIN MARKERS	2	01/01/2003
604.05D	PIPE CULVERT HEADWALLS – TYPE S	2	08/01/2006
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604.70	SLOTTED DRAIN	2	03/01/1994
605.10I	PAVEMENT UNDERDRAINAGE	4	06/01/2013
606.00AY	GUARDRAIL	7	01/01/2020
606.01F	MEDIAN PIER PROTECTION	9	04/01/2021
606.22U	BRIDGE ANCHOR SECTION - SAFETY BARRIER CURB ON BRIDGE	6	07/01/2016
606.23J	BRIDGE ANCHOR SECTION - THRIE BEAM RAIL ON BRIDGE	5	07/01/2016
606.30L	GUARDRAIL - TERMINAL ANCHOR ENDS	7	04/01/2021
606.31B	CRASHWORTHY END TERMINALS - TYPE A - GRADING LIMITS	1	10/01/2019

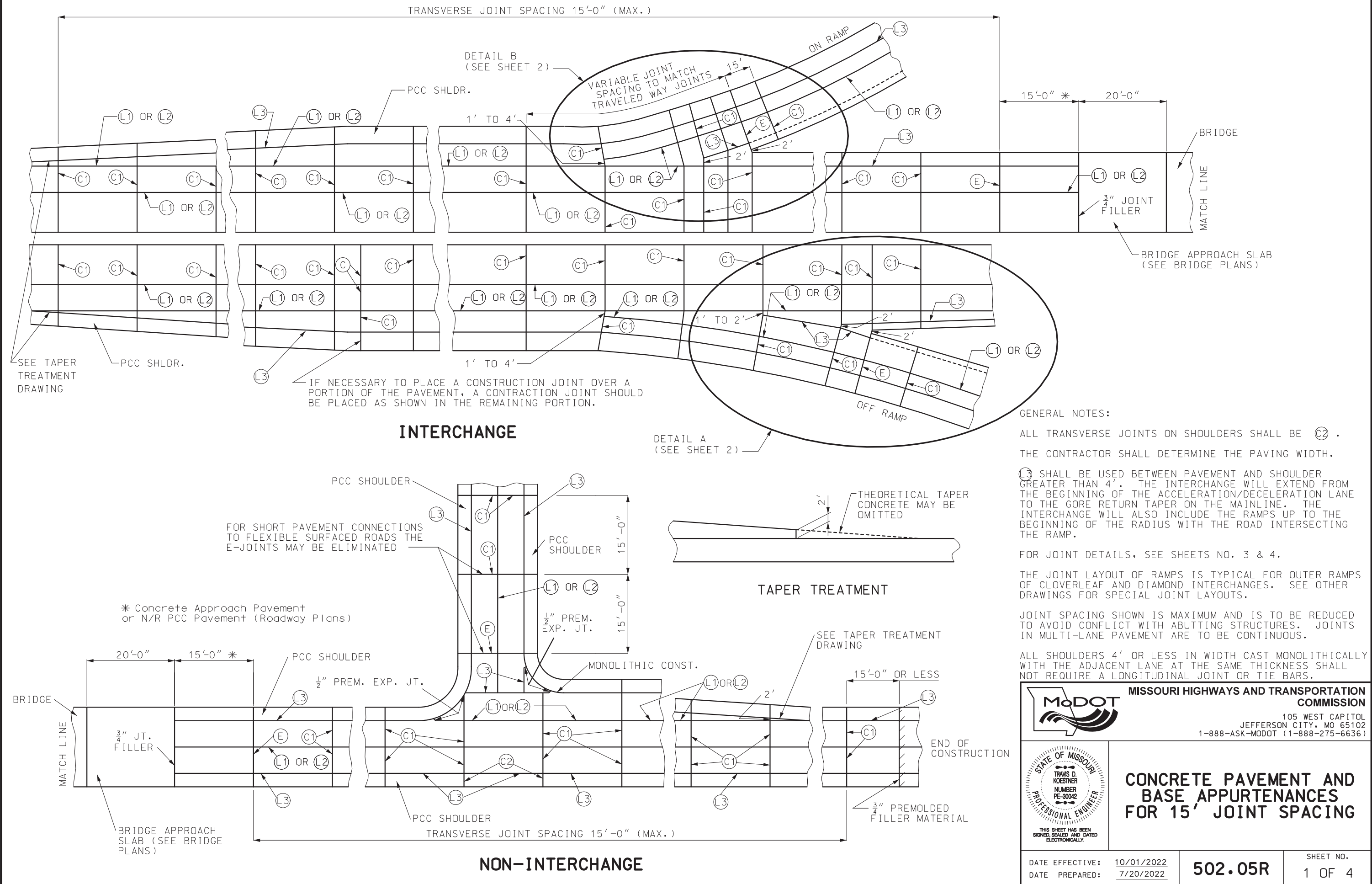
STANDARD NO.	DRAWING TITLE	NO. OF SHEETS	EFFECTIVE DATE
606.40D	ONE-STRAND ACCESS RESTRAINT CABLE	2	07/01/2004
606.41M	THREE-STRAND GUARD CABLE	7	04/01/2021
606.50E	MIDWEST GUARDRAIL SYSTEM (MGS) *	8	01/01/2023
606.51	MIDWEST GUARDRAIL SYSTEM (MGS) - MEDIAN PIER PROTECTION	2	04/01/2021
606.60B	MIDWEST GUARDRAIL SYSTEM (MGS) - VERTICAL BARRIER TRANSITIONS	6	07/01/2021
606.70B	MIDWEST GUARDRAIL SYSTEM (MGS) - THRIE BEAM RAIL ON BRIDGE	5	04/01/2018
606.80C	MIDWEST GUARDRAIL SYSTEM (MGS) - TERMINAL ANCHOR ENDS	7	07/01/2021
606.81B	MASH - CRASHWORTHY END TERMINALS - TYPE A - GRADING LIMITS	1	10/01/2019
607.10V	CHAIN-LINK FENCE	1	02/01/2007
607.11H	CHAIN-LINK FENCE FOR RETAINING WALLS	1	06/01/2009
607.20G	WOVEN WIRE FENCE	2	07/01/2016
608.00K	PAVED APPROACHES	2	07/01/2020
608.10P	CONCRETE SIDEWALK	1	04/01/2015
608.20E	CONCRETE STAIRS	2	04/01/2015
608.30A	CONCRETE MEDIAN STRIP	1	10/01/2020
608.40A	HANDRAILING	4	01/01/2021
608.50A	CURB RAMPS *	4	01/01/2023
609.00Q	CONCRETE CURB, CURB AND GUTTER AND GUTTER *	2	10/01/2022
609.15D	PAVED DITCHES	1	07/01/2016
609.40S	DRAIN BASIN, SHOULDER PAVING AND FILL SLOPES AT BRIDGE ENDS	3	01/01/2022
609.60C	ROCK DITCH LINER	1	03/01/1993
609.70C	ROCK LINING FOR CULVERT OUTLET	1	10/01/1981
611.60R	CONCRETE SLOPE PROTECTION	1	07/01/2015
612.20E	SAND FILLED IMPACT ATTENUATORS	1	11/01/2018
613.00T	PAVEMENT REPAIR	4	01/01/2020
614.10U	GRATES AND BEARING PLATES	1	10/01/2021
614.11D	CURVED VANE GRATE AND FRAME	1	01/01/2021
614.30E	MANHOLE AND FRAME COVERS	2	07/01/1996
616.10BA	TEMPORARY TRAFFIC CONTROL DEVICES *	9	01/01/2023
616.20	TEMPORARY TRAFFIC CONTROL PLANS - TWO-LANE ROADWAYS	5	07/01/2021
617.10M	PERMANENT CONCRETE TRAFFIC BARRIER	11	10/01/2020
617.20F	TEMPORARY CONCRETE TRAFFIC BARRIER	8	01/01/2021
619.10J	PAVEMENT EDGE TREATMENT	1	10/01/2017
620.00N	PAVEMENT MARKING *	6	10/01/2022
620.10G	TEMPORARY PAVEMENT MARKING	5	07/01/2017
625.00	HOLE PATTERN FOR PAVEMENT SLAB STABILIZATION	1	10/01/1998
626.00H	RUMBLE STRIPS *	2	07/01/2022


## EFFECTIVE: 01/01/2023

STANDARD NO.	DRAWING TITLE	NO. OF SHEETS	EFFECTIVE DATE
703.10J	CONCRETE SINGLE BOX CULVERT – STRAIGHT WINGS (SQUARED)	3	01/01/2021
703.11J	CONCRETE SINGLE BOX CULVERT – FLARED WINGS (SQUARED)	3	01/01/2021
703.12J	CONCRETE SINGLE BOX CULVERT – STRAIGHT WINGS (LEFT ADVANCE)	3	01/01/2021
703.13J	CONCRETE SINGLE BOX CULVERT – FLARED WINGS (LEFT ADVANCE)	3	01/01/2021
703.14J	CONCRETE SINGLE BOX CULVERT – STRAIGHT WINGS (RIGHT ADVANCE)	3	01/01/2021
703.15E	CONCRETE SINGLE BOX CULVERT – FLARED WINGS (RIGHT ADVANCE)	3	01/01/2021
703.16	CONCRETE SINGLE BOX CULVERT – CUT SECTIONS	1	01/01/2021
703.17	CONCRETE SINGLE BOX CULVERT – MEMBER SIZES AND REINFORCEMENT	14	04/01/2011
703.37C	CONCRETE BOX CULVERT – EXTERIOR WING REINFORCEMENT	2	04/01/2011
703.38A	CONCRETE BOX CULVERT – CUTTING DETAILS	2	10/01/2009
703.40H	CONCRETE DOUBLE BOX CULVERT – STRAIGHT WINGS (SQUARE)	3	01/01/2021
703.41H	CONCRETE DOUBLE BOX CULVERT – FLARED WINGS (SQUARE)	3	01/01/2021
703.42H	CONCRETE DOUBLE BOX CULVERT – STRAIGHT WINGS (LEFT ADVANCE)	3	01/01/2021
703.43H	CONCRETE DOUBLE BOX CULVERT – FLARED WINGS (LEFT ADVANCE)	3	01/01/2021
703.44H	CONCRETE DOUBLE BOX CULVERT – STRAIGHT WINGS (RIGHT ADVANCE)	3	01/01/2021
703.45C	CONCRETE DOUBLE BOX CULVERT – FLARED WINGS (RIGHT ADVANCE)	3	01/01/2021
703.46	CONCRETE DOUBLE BOX CULVERT – CUT SECTION	1	01/01/2021
703.47	CONCRETE DOUBLE BOX CULVERT – MEMBER SIZES AND REINFORCEMENT	27	10/01/2011
703.60E	CONCRETE BOX STRUCTURE – PIPE INLET	1	07/01/2001
703.80H	CONCRETE TRIPLE BOX CULVERT – STRAIGHT WINGS (SQUARE)	3	01/01/2021
703.81H	CONCRETE TRIPLE BOX CULVERT – FLARED WINGS (SQUARE)	3	01/01/2021
703.82H	CONCRETE TRIPLE BOX CULVERT – STRAIGHT WINGS (LEFT ADVANCE)	3	01/01/2021
703.83H	CONCRETE TRIPLE BOX CULVERT – FLARED WINGS (LEFT ADVANCE)	3	01/01/2021
703.84H	CONCRETE TRIPLE BOX CULVERT – STRAIGHT WINGS (RIGHT ADVANCE)	3	01/01/2021
703.85C	CONCRETE TRIPLE BOX CULVERT – FLARED WINGS (RIGHT ADVANCE)	3	01/01/2021
703.86	CONCRETE TRIPLE BOX CULVERT – CUT SECTIONS	1	01/01/2021
703.87	CONCRETE TRIPLE BOX CULVERT – MEMBER SIZES AND REINFORCEMENT	27	12/01/2011
706.35H	BAR SUPPORTS FOR CONCRETE REINFORCEMENT	1	07/01/2004
712.40L	STEEL DAMS AT EXPANSION JOINTS	1	10/01/2019
725.00C	CORRUGATED METAL PIPE INSTALLATION METHODS *	5	04/01/2011
725.31C	METAL CURTAIN WALL AND METAL INLETS	1	07/01/2004
726.30J	RIGID CULVERT INSTALLATION METHODS	2	04/01/2015
730.00E	THERMOPLASTIC PIPE INSTALLATION METHODS	1	04/01/2015
731.00U	PRECAST MANHOLES	2	07/01/2016
731.10S	PRECAST DROP INLET	8	01/01/2022
732.00S	FLARED END SECTION	3	07/01/2021
732.05D	BEVELED PIPE END TREATMENT	2	01/01/2021
732.10H	SAFETY SLOPE END SECTION	3	01/01/2021
733.00	PRECAST CONCRETE BOX CULVERT TIES	1	07/01/2021
805.00	SEEDING *	1	07/01/2022
806.10K	TEMPORARY EROSION CONTROL MEASURES *	6	01/01/2023
808.00	TYPICAL PLANTING ILLUSTRATIONS	3	07/01/2004

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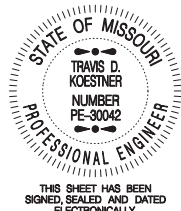
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.





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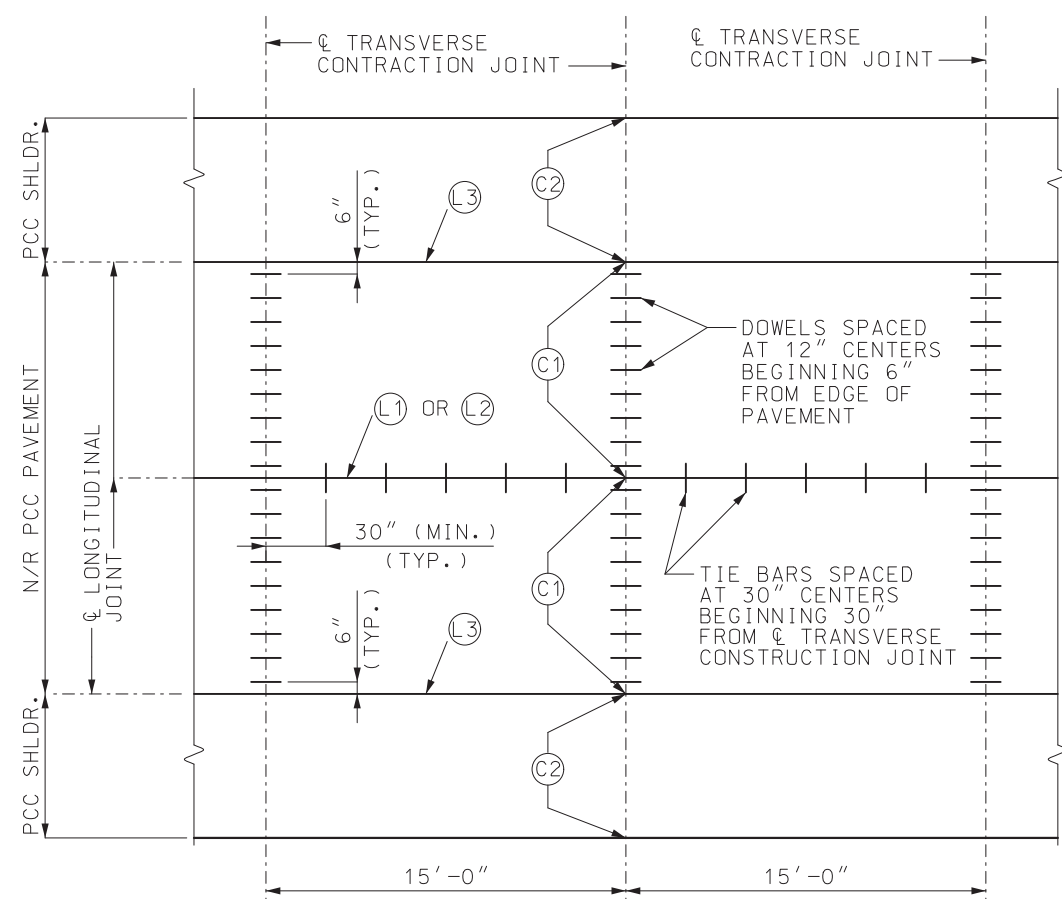
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



**CONCRETE PAVEMENT AND BASE APPURTENANCES FOR 15' JOINT SPACING**

DATE EFFECTIVE:	10/01/2022	<b>502.05R</b>	SHEET NO.
DATE PREPARED:	7/20/2022		1 OF 4

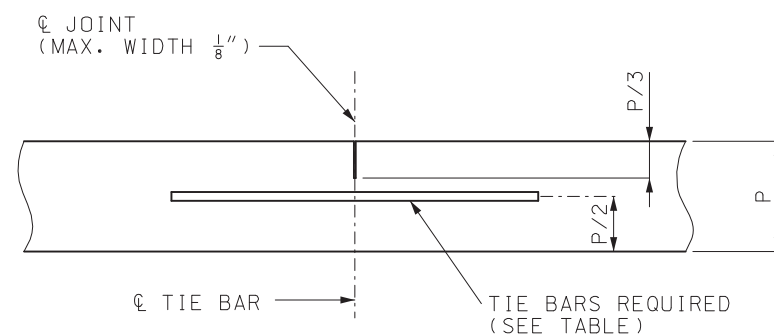




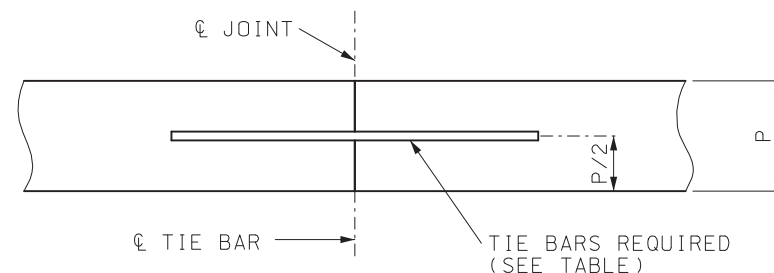
JOINT PLAN AND SPACING FOR CONTRACTION JOINTS (1)

(1) LONGITUDINAL JOINT NOT REQUIRED FOR 4' OR LESS SHOULDER, PAVED MONOLITHICALLY WITH ADJACENT DRIVING LANE, ON DIVIDED HIGHWAYS AND RAMP.

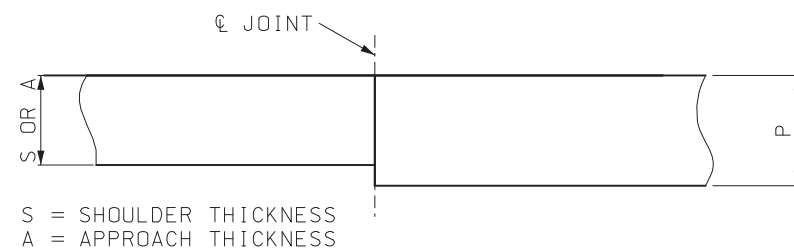
DOWEL AND TIE BAR TABLE				
PCCP THICKNESS (P)	DOWEL		TIE BAR	
	SIZE	SPACING	SIZE	SPACING
LESS THAN 7"	NONE	NONE	#5X30"	30" CTRS.
7" TO 10"	1 1/4"X18"	12" CTRS.	#5X30"	30" CTRS.
GREATER THAN 10"	1 1/2"X18"	12" CTRS.	#6X40"	30" CTRS.



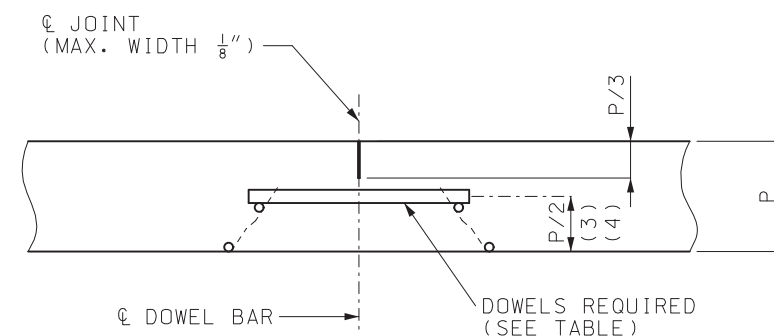
LONGITUDINAL JOINT L1



LONGITUDINAL CONSTRUCTION JOINT L2



LONGITUDINAL CONSTRUCTION JOINT FOR SHOULDER AND APPROACHES L3

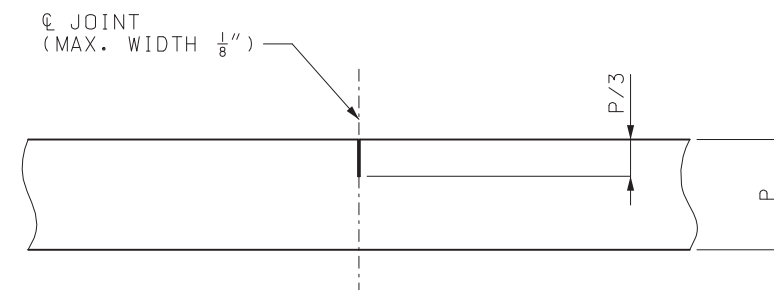


FOR PERMISSIBLE TYPES OF DOWEL SUPPORTING UNITS, SEE OTHER DRAWINGS.

TRANSVERSE CONTRACTION JOINTS FOR CONCRETE PAVEMENT OR BASE WIDENING SHALL MATCH EXISTING JOINTS.

TRANSVERSE CONTRACTION JOINT C1 (2)

- (2) DOWEL BARS ARE REQUIRED FOR ALL PAVEMENTS HAVING THE SAME THICKNESS AS THE TRAVELED WAY.  
(3) FOR PAVEMENTS HAVING THICKNESS IN 1/2" INCREMENTS, DOWEL BASKETS SHALL BE (P-1/2")/2.  
(4) DOWEL BARS MAY BE PLACED BY MECHANICAL MEANS AT THE OPTION OF THE CONTRACTOR.



TRANSVERSE CONTRACTION JOINT C2

GENERAL NOTES:

THE FINAL POSITION OF ALL DOWELS AND TIE BARS SHALL BE PERPENDICULAR TO THE PLANE OF THE JOINT AND PARALLEL TO THE SURFACE OF THE PAVEMENT AND PARALLEL TO EACH OTHER.

L3 JOINT FOR FULL DEPTH OR PARTIAL DEPTH SHOULDERS.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

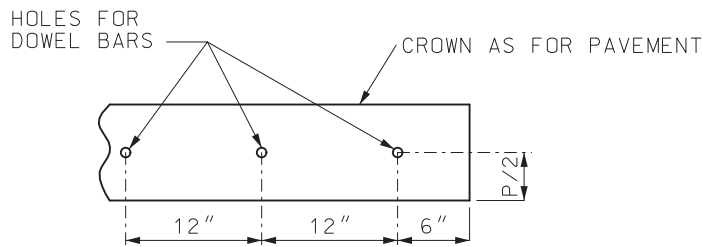
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

CONCRETE PAVEMENT AND BASE APPURTENANCES FOR 15' JOINT SPACING

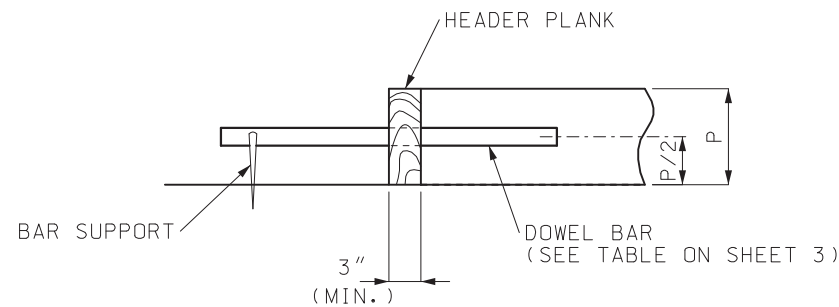
DATE EFFECTIVE: 10/01/2022  
DATE PREPARED: 7/20/2022

502.05R

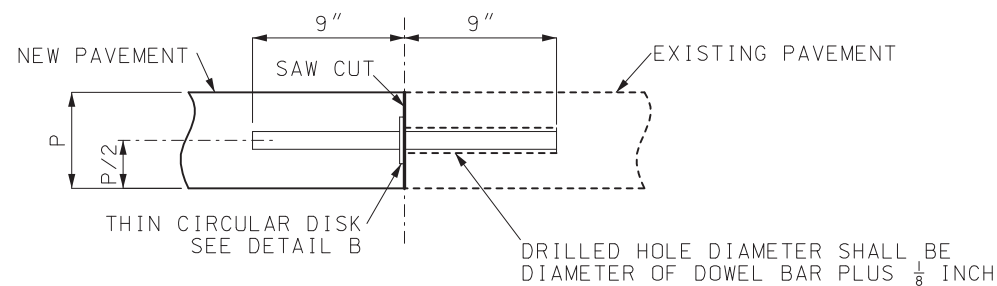
SHEET NO.  
3 OF 4



PART ELEVATION OF  
HEADER PLANK



HEADER SECTION



SAWED SECTION

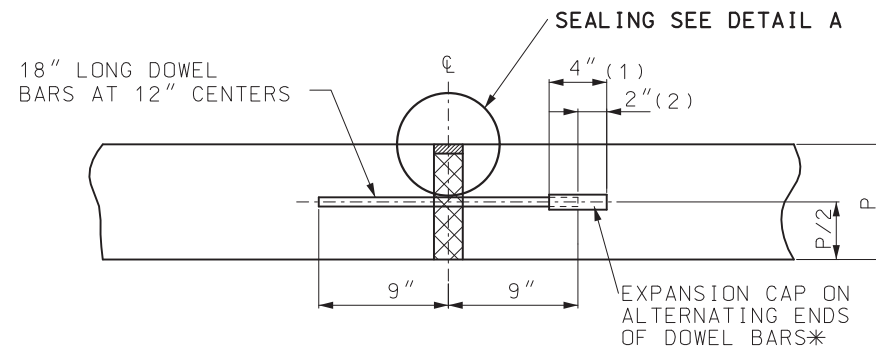
THE HEADER BOARD SHALL BE SUFFICIENTLY RIGID TO PREVENT DISTORTION FROM THE TYPICAL SECTION AND MAINTAIN A STRAIGHT LINE FROM PAVEMENT EDGE TO PAVEMENT EDGE.

THE CONSTRUCTION JOINT MAY BE SAWED FULL DEPTH. HOLES FOR DOWEL BARS SHALL BE DRILLED AFTER THE CONCRETE HAS SUFFICIENT SET TO PREVENT DAMAGE. DOWEL BARS SHALL BE BONDED INTO THE HOLES.

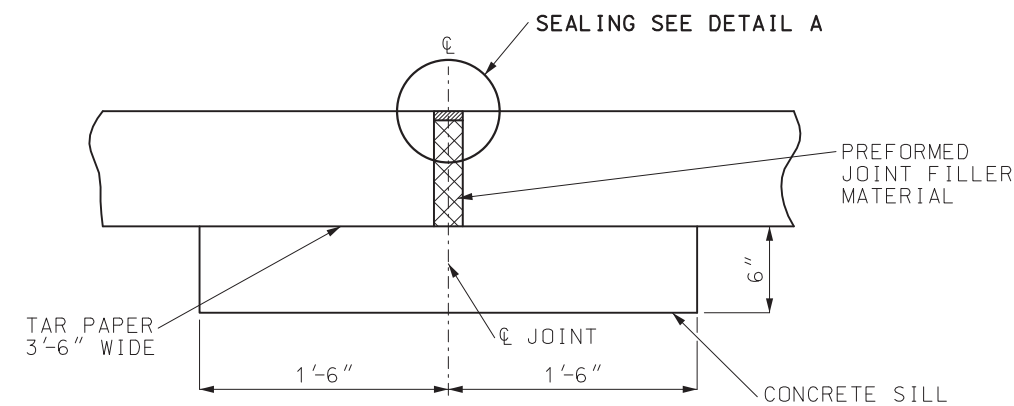
BONDING FOR DOWEL BARS SHALL BE EPOXY OR POLYESTER BONDING AGENTS AS SPECIFIED IN SECTION 1039.

THE PORTION OF THE DOWEL OUTSIDE THE HOLE SHALL BE COATED WITH AN APPROVED LUBRICANT.

## CONSTRUCTION JOINT (C)



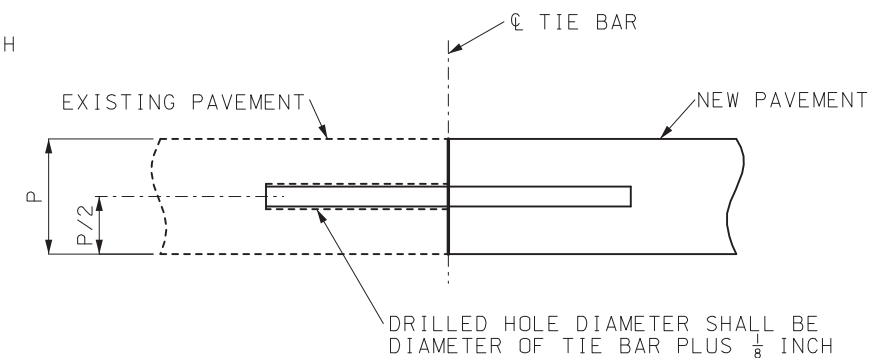
EXPANSION JOINTS (E)



SILL SHALL EXTEND 18" BEYOND EACH EDGE OF THE PAVEMENT AND SHALL BE CONSTRUCTED OF CONCRETE REGARDLESS OF ADJACENT BASE MATERIAL.

## ALTERNATE EXPANSION JOINTS (E)

(CONTRACTOR MAY SELECT EITHER EXPANSION JOINT (E))



TIE BARS SHALL BE EPOXY COATED, DEFORMED REINFORCING BARS MEETING THE REQUIREMENTS OF SECTIONS 710 AND 1057.

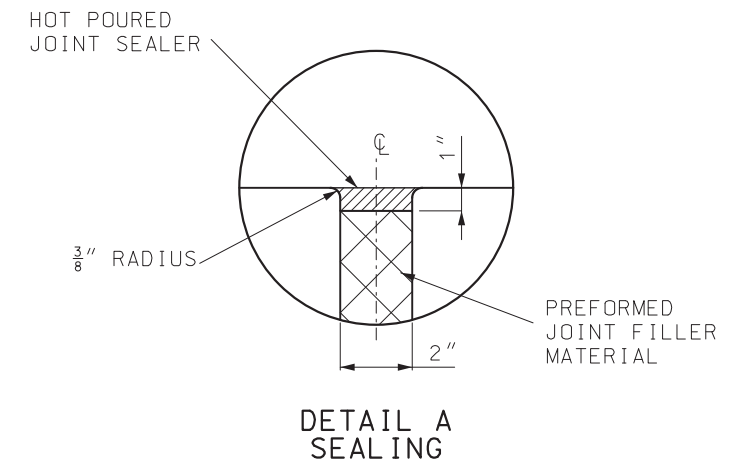
BONDING FOR TIE BARS SHALL BE EPOXY OR POLYESTER BONDING AGENTS AS SPECIFIED IN SECTION 1039.

TIE BAR SIZE AND LENGTH SHALL BE BASED ON THE THICKNESS OF THE THINNER PAVEMENT OR SHOULDER TO BE TIED TOGETHER.

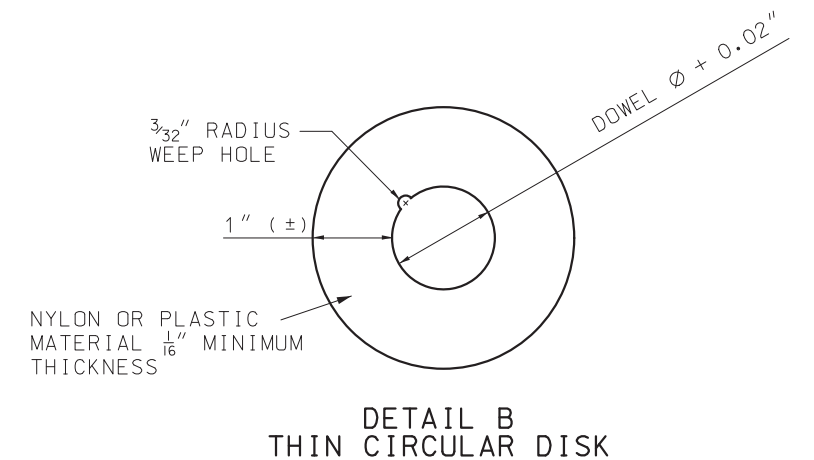
## LONGITUDINAL CONSTRUCTION JOINT (EXISTING PAVEMENT) (L)

- (1) LENGTH OF CAP
- (2) GAP BETWEEN END OF CAP AND DOWEL.

\* FOR EXPANSION JOINTS FORMED USING A CONSTRUCTION HEADER, THE EXPANSION CAPS SHALL BE INSTALLED ON THE EXPOSED END OF EACH BAR ONCE THE HEADER HAS BEEN REMOVED AND THE JOINT FILLER MATERIAL HAS BEEN INSTALLED.



DETAIL A  
SEALING



DETAIL B  
THIN CIRCULAR DISK



		<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b>	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)			
	<b>CONCRETE PAVEMENT AND BASE APPURTENANCES FOR 15' JOINT SPACING</b>		
DATE EFFECTIVE: 10/01/2022 DATE PREPARED: 7/19/2022	<b>502.05R</b>	SHEET NO. 4 OF 4	

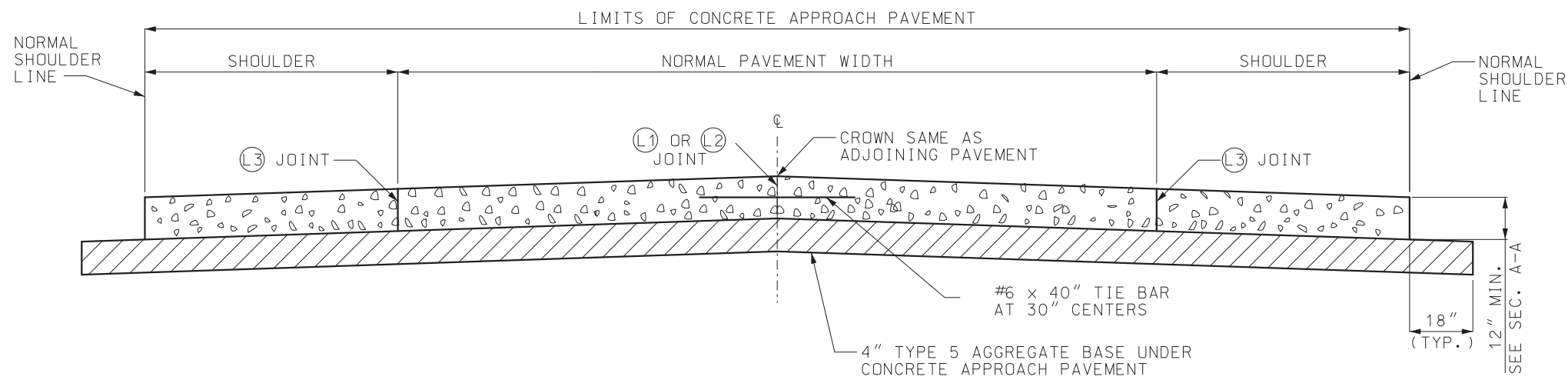
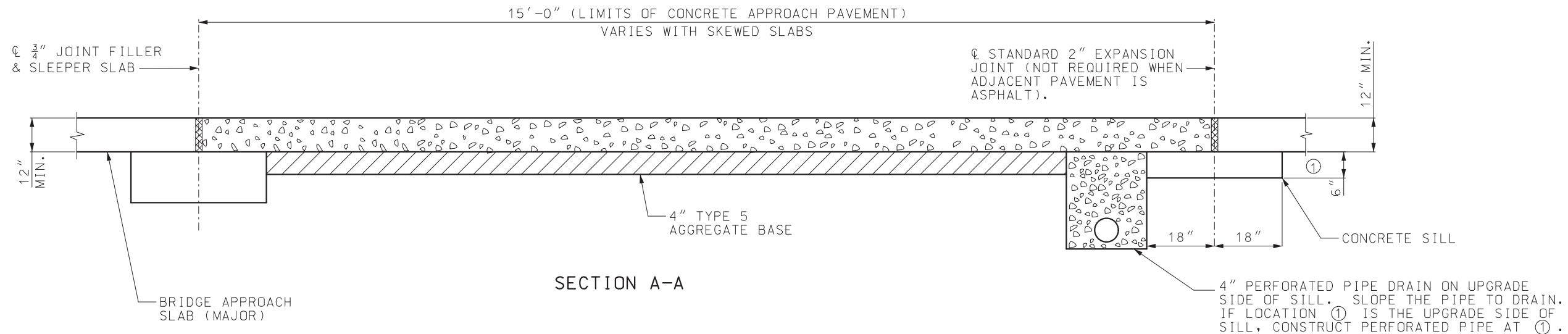




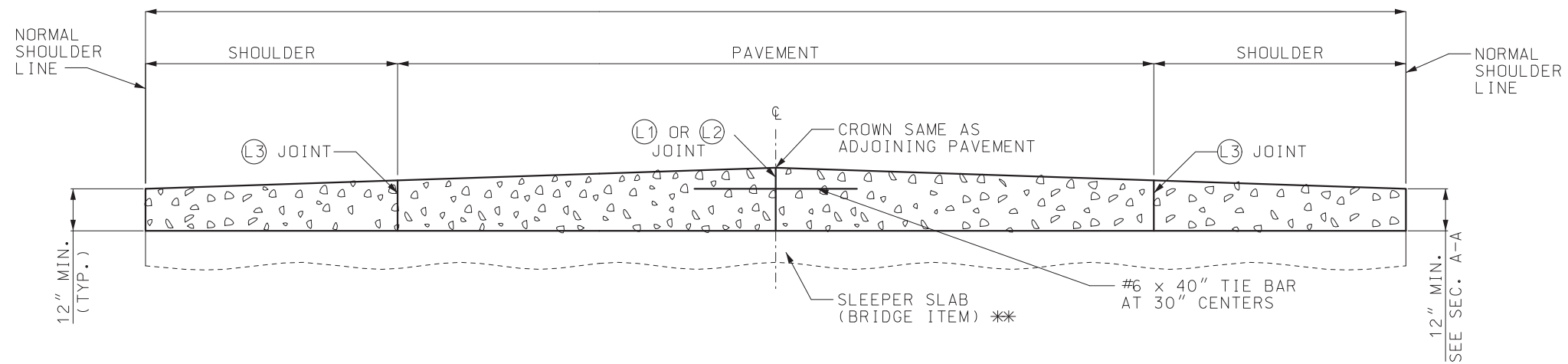
\*\* NOT REQUIRED WHEN ADJACENT PAVEMENT  
IS ASPHALT.

NOTE:  
FOR SECTIONS A-A, B-B AND C-C,  
SEE SHEET 3 OF 3.

	<p align="center"><b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b></p> <p align="right">105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)</p>		
 <p align="center">THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</p>	<p align="center"><b>CONCRETE APPROACH PAVEMENT</b></p> <p align="center">FOR MULTI-LANE PAVEMENTS (MAJOR ROUTE)</p>		
<p>DATE EFFECTIVE: <u>10/01/2022</u></p> <p>DATE PREPARED: <u>7/19/2022</u></p>	<p align="center"><b>504.00L</b></p>	<p align="center">SHEET NO. <b>2 OF 3</b></p>	




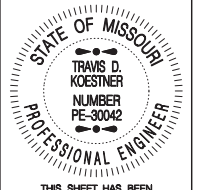
FOR LOCATIONS OF SECTIONS A-A, B-B AND C-C, SEE SHEETS 1 AND 2.

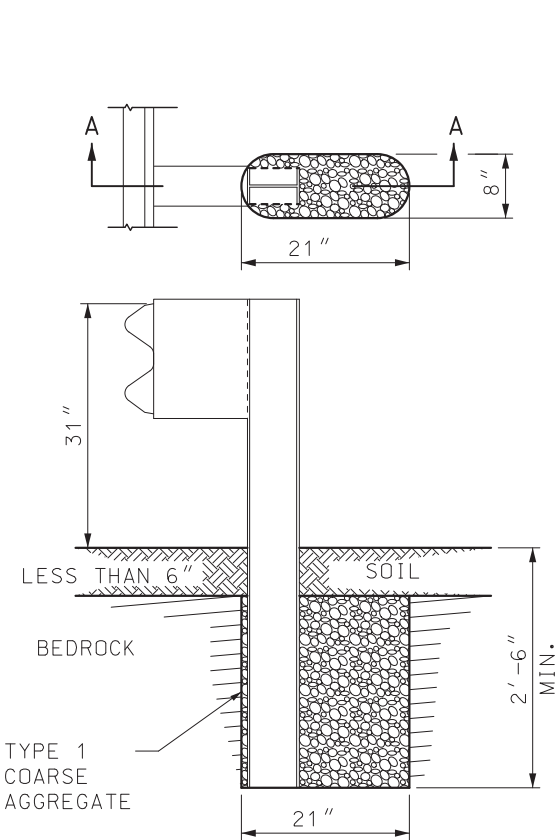


\*\* TOP OF SLEEPER SLAB MAY BE FLAT OR CROWNED. SEE BRIDGE PLANS.

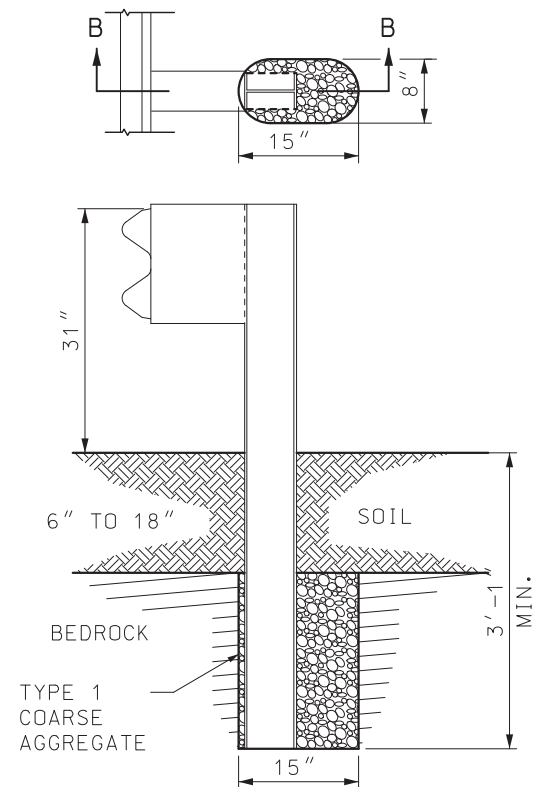
#### GENERAL NOTES:

SEE STANDARD DRAWING 605.10 FOR PIPE OUTLET DETAIL FROM SHOULDER POINT TO INSLOPE.

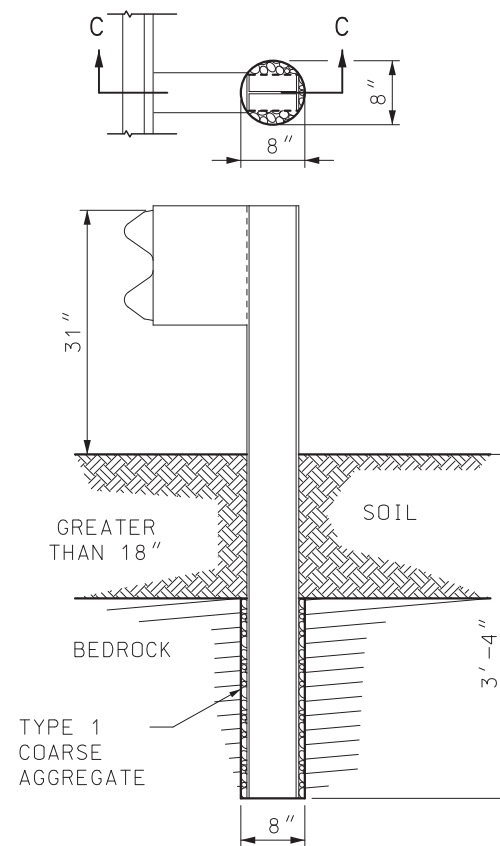
 <b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
 <p>STATE OF MISSOURI TRAVIS D. KOESTNER NUMBER PE-30042 PROFESSIONAL ENGINEER</p> <p>THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</p>	<p><b>CONCRETE APPROACH PAVEMENT (MAJOR ROUTE)</b></p>
DATE EFFECTIVE: 10/01/2022 DATE PREPARED: 7/19/2022	<p><b>504.00L</b></p>
SHEET NO. 3 OF 3	



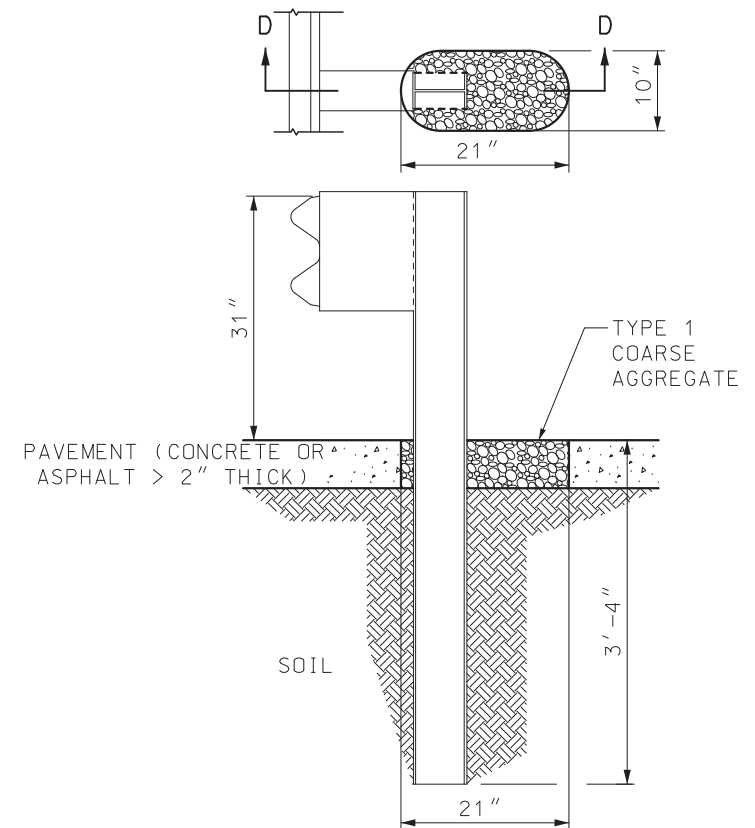
SECTION A-A  
ROCK ENCOUNTERED  
UP TO 6" BENEATH SURFACE



SECTION B-B  
ROCK ENCOUNTERED  
6" TO 18" BENEATH SURFACE

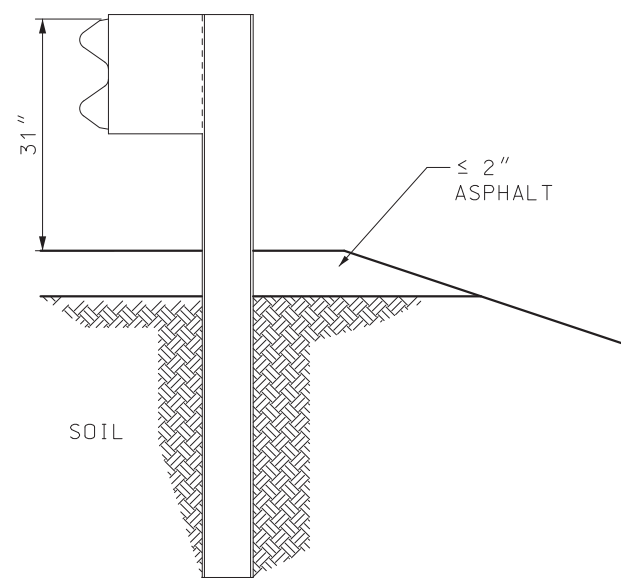


SECTION C-C  
ROCK ENCOUNTERED MORE  
THAN 18" BENEATH SURFACE



SECTION D-D  
SETTING POST THROUGH PAVEMENT  
(CONCRETE OR ASPHALT > 2" THICK)

## SETTING POST IN SOLID ROCK



SETTING POST THROUGH ASPHALT  $\leq 2"$  THICK

### GENERAL NOTES:

HOLES IN SOLID ROCK SHALL PROVIDE A DIAMETER OF NOT LESS THAN 4 INCHES GREATER THAN THE MAXIMUM TRANSVERSE DIMENSION OF THE POST SECTION.

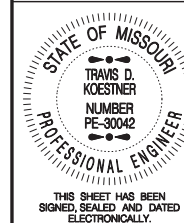
POST MAY BE SHORTER WHERE PLACED IN 2 FEET OF SOLID ROCK. STEEL POSTS MAY BE FLAME OR SAW CUT. REPAIR OF CUT SHALL BE IN ACCORDANCE WITH SEC 712 OF THE STANDARD SPECIFICATIONS.

NO ADDITIONAL PAYMENT WILL BE MADE FOR CUTTING THE OVERSIZED HOLES OR PLACING AGGREGATE IN THE HOLES, AS INDICATED IN THIS PLAN.



MISSOURI HIGHWAYS AND TRANSPORTATION  
COMMISSION

105 WEST CAPITOL  
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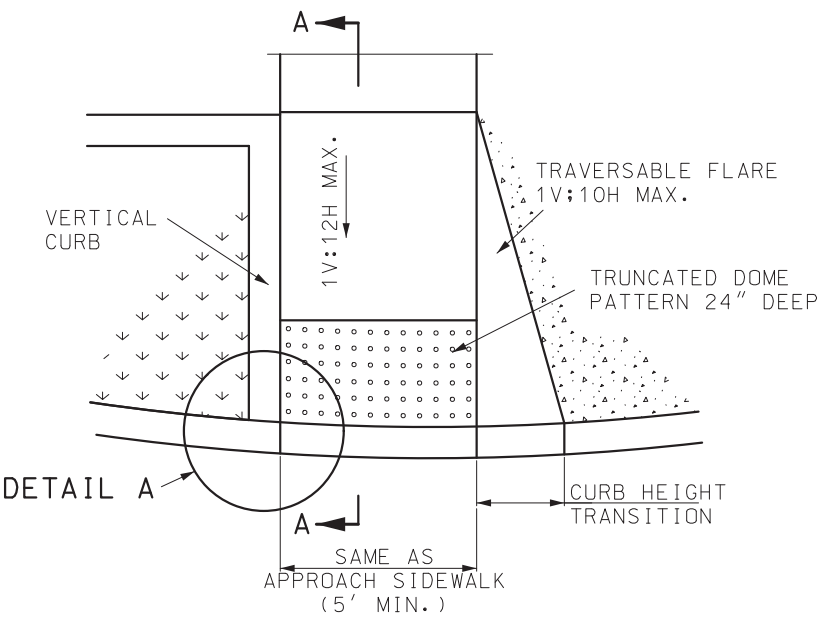
THIS SHEET HAS BEEN  
SIGNED, SEALED AND DATED  
ELECTRONICALLY.

MIDWEST GUARDRAIL SYSTEM  
(MGS)  
SPECIAL INSTALLATIONS

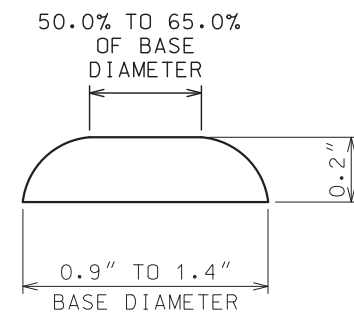
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DATE PREPARED: 10/7/2022

606.50E

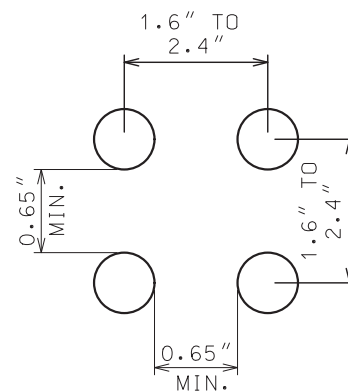
SHEET NO.  
5 OF 8



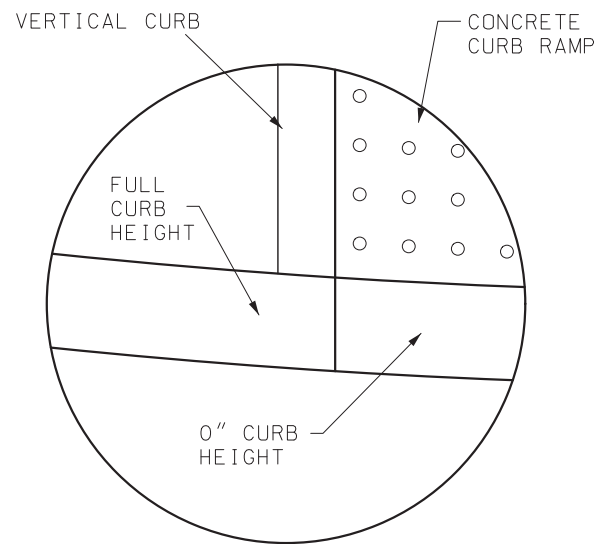
CURB RAMP DETAIL



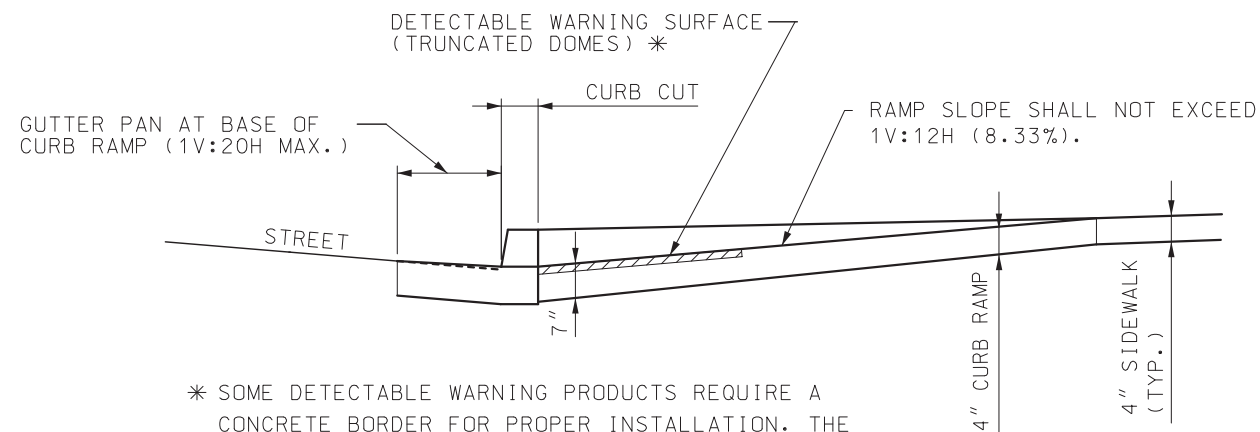
TRUNCATED DOMES  
CROSS SECTION



TRUNCATED DOMES  
SPACING



DETAIL A



\* SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION. THE CONCRETE BORDER SHALL NOT EXCEED 2" PER SIDE.

SECTION A-A

#### GENERAL NOTES:

ALL AREAS OF THE PEDESTRIAN ACCESS ROUTE MUST BE COMPLIANT WITH THE AMERICANS WITH DISABILITIES ACT - GUIDELINES FOR ACCESSIBLE PUBLIC RIGHTS OF WAY". EXCEPTIONS MUST BE APPROVED BY THE ENGINEER. ALL OTHER AREAS OF NON-COMPLIANCE SHALL BE REMOVED AND CORRECTED AT THE CONTRACTOR'S EXPENSE.

THE SURFACES OF PEDESTRIAN ACCESS ROUTES AND ELEMENTS, AND SPACES REQUIRED TO CONNECT TO PEDESTRIAN ACCESS ROUTES, SHALL BE FIRM, STABLE, SLIP RESISTANT, AND SHALL NOT POND WATER.

SIDEWALK, RAMP AND LANDING CROSS SLOPES SHALL BE 1.00% TO FACILITATE DRAINAGE (2.00% MAX.).

THE CROSS SLOPE OF THE CONTINUOUS PEDESTRIAN ACCESS ROUTE THROUGH ENTRANCES, ALLEYS, AND SIDE ROAD CONNECTIONS WITH STOP OR YIELD CONTROL SHALL BE 1.00% TO FACILITATE DRAINAGE (2.00% MAX.).

WHERE PEDESTRIAN ACCESS ROUTES ARE CONTAINED WITHIN PEDESTRIAN STREET CROSSINGS WITHOUT YIELD OR STOP CONTROL, THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL BE 5.00% MAXIMUM.

WHERE PEDESTRIAN ACCESS ROUTES ARE CONTAINED WITHIN MIDBLOCK PEDESTRIAN STREET CROSSINGS, THE CROSS SLOPE OF THE PEDESTRIAN ACCESS ROUTE SHALL BE PERMITTED TO EQUAL THE STREET OR HIGHWAY GRADE.

30"x 48" CLEAR SPACE SHALL BE PROVIDED CENTERED ON THE PEDESTRIAN PUSH BUTTON.

BEYOND THE BOTTOM GRADE BREAK OF A CURB RAMP, A CLEAR SPACE 4' MINIMUM BY 4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE.

SIDE FLARES OF CURB RAMPS, IN THE PATH OF PEDESTRIAN TRAVEL (TRAVERSABLE), SHALL NOT EXCEED A SLOPE OF 1V:10H. SIDE FLARES OUTSIDE THE PEDESTRIAN PATH (NONTRAVERSABLE) MAY BE VERTICAL.



TRANSITION FROM SIDEWALK OR CURB RAMP TO GUTTER TO ROADWAY SHALL BE FLUSH.

DETECTABLE WARNING SURFACES (TRUNCATED DOMES) SHALL BE PREFORMED AND INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. STAMPED CONCRETE WILL NOT BE ACCEPTED.

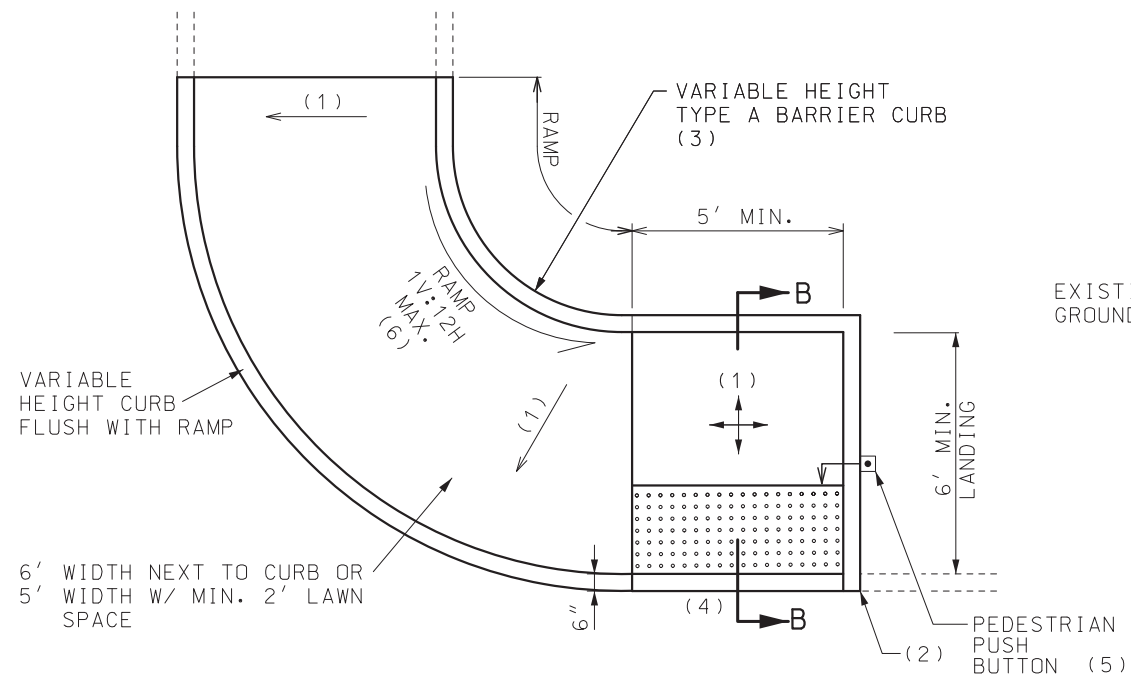
THE DETECTABLE WARNING SURFACE SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. TRUNCATED DOMES SHALL SPAN THE FULL WIDTH OF THE RAMP OR LANDING 24" DEEP.

DETECTABLE WARNING SURFACES SHALL BE ALIGNED PERPENDICULAR OR RADIAL TO THE BREAK BETWEEN THE RAMP, LANDING OR BLENDED TRANSITION, AND THE STREET.

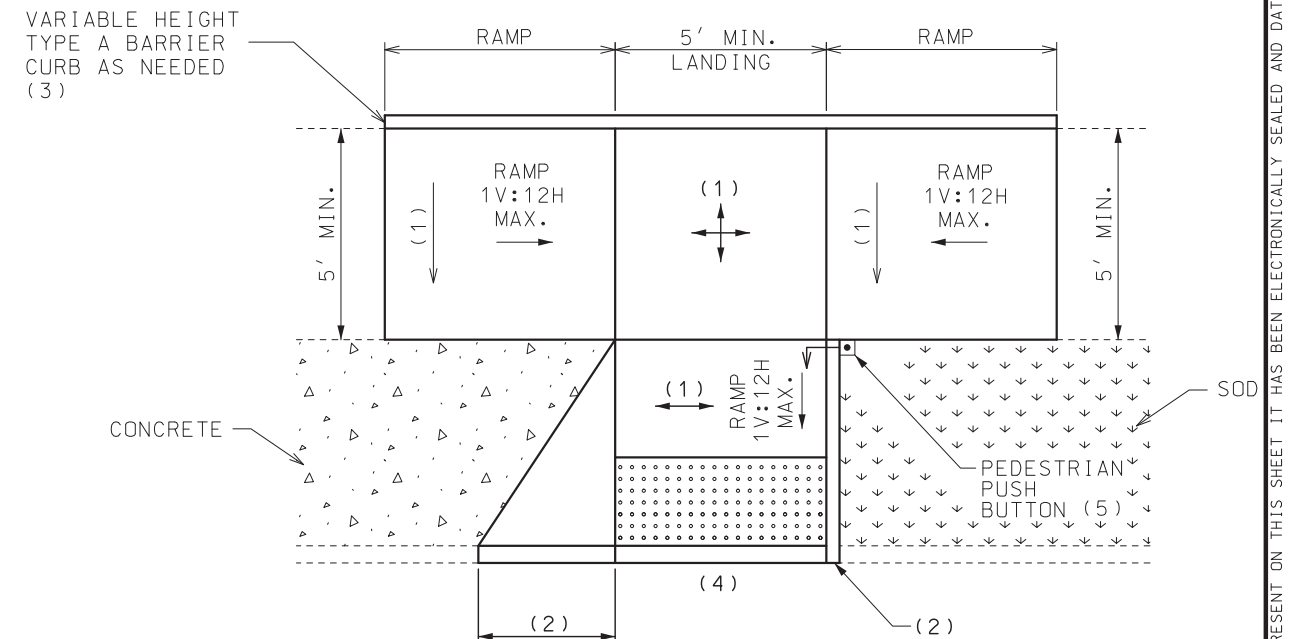
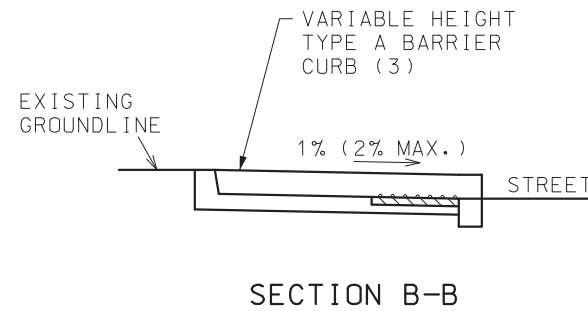
WHERE THE BOTTOM GRADE BREAK OF A CURB RAMP IS LESS THAN 5' FROM THE BACK OF CURB, DETECTABLE WARNINGS SHALL BE LOCATED ON THE RAMP SURFACE AT THE BACK OF THE CURB. WHERE THE GRADE BREAK IS GREATER THAN 5' FROM THE BACK OF CURB, THE DETECTABLE WARNING SHALL BE LOCATED ON THE LOWER LANDING.

 <b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b>	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
	<b>CURB RAMPS</b>
DATE EFFECTIVE: 01/01/2023 DATE PREPARED: 10/6/2022	SHEET NO. <b>608.50A</b> 1 of 4

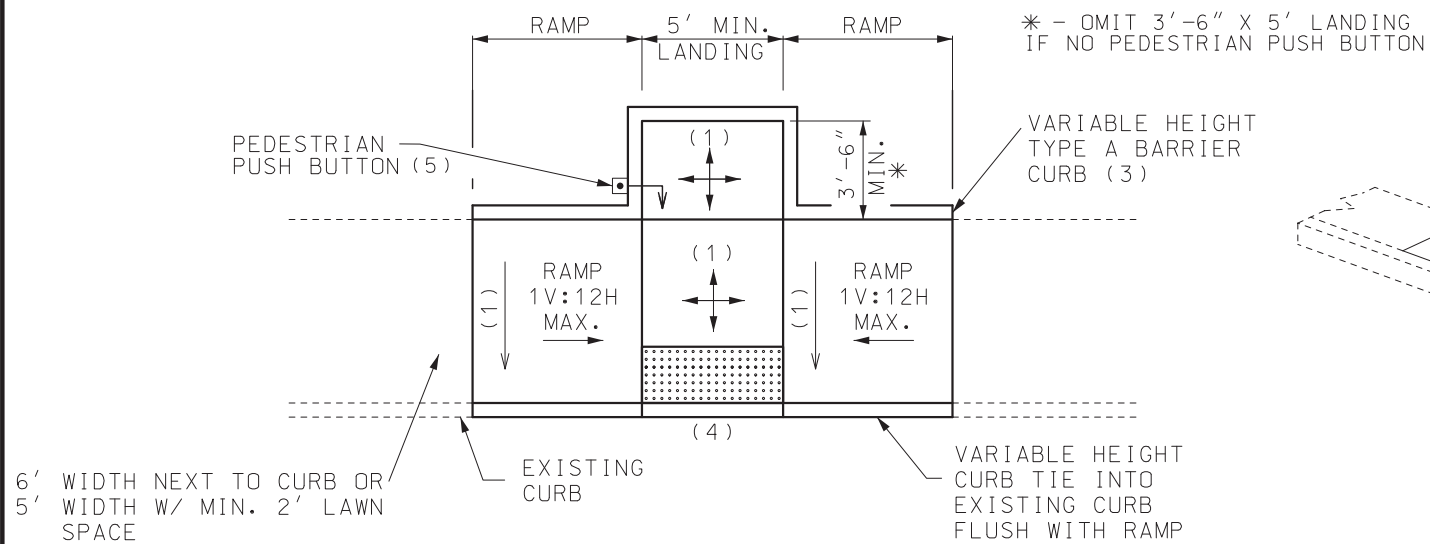
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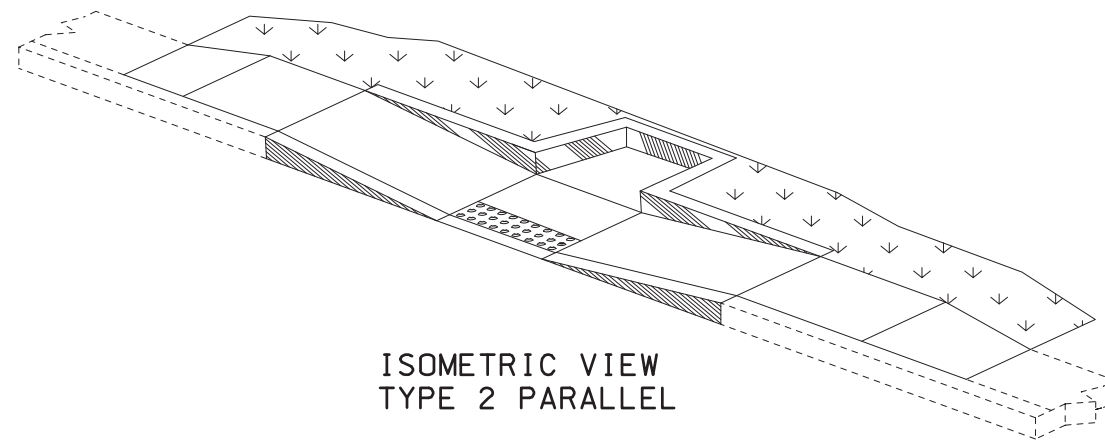
TYPE 1 PARALLEL



COMPOUND PERPENDICULAR

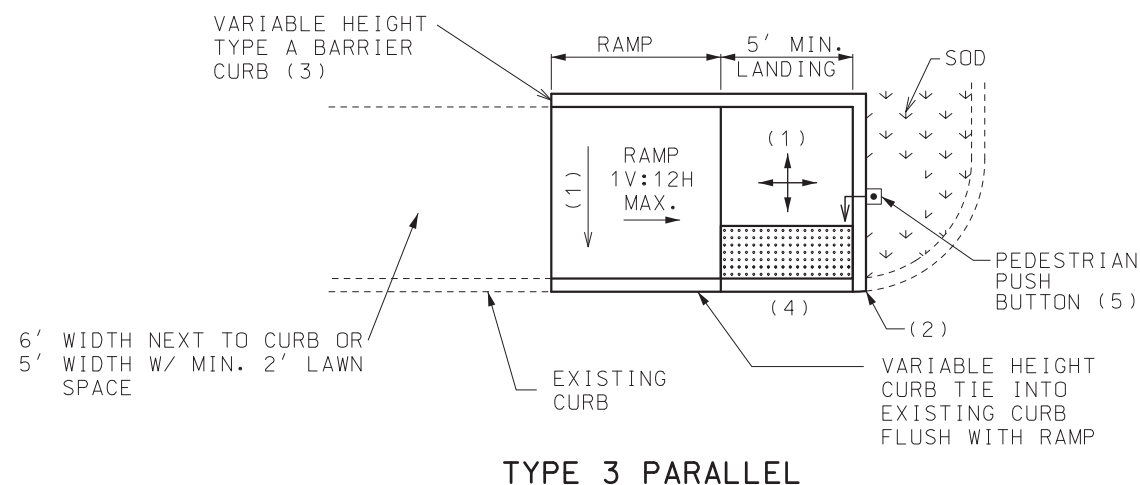


TYPE 2 PARALLEL


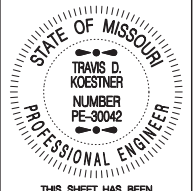


GENERAL NOTES:

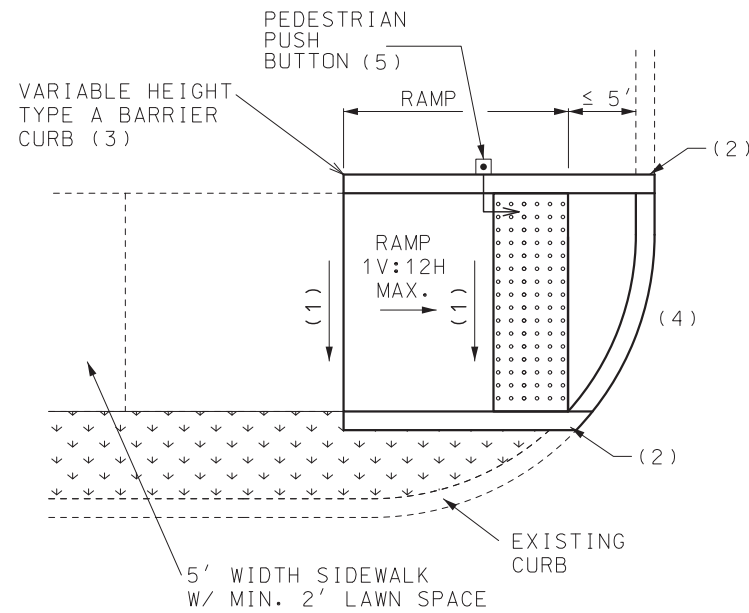
- (1) 1.0% (2.0% MAX.) CROSS SLOPE OR ROAD GRADE EXCEPTION.
- (2) VARIABLE HEIGHT VERTICAL CURB. IF TRAVERSABLE USE A MAXIMUM 1V:10H FLARE MEASURED PARALLEL TO THE CURB LINE.
- (3) HEIGHT VARIES TO MEET EXISTING GROUND.
- (4) THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE FOOT OF CURB RAMP RUNS, BLENDED TRANSITIONS, AND TURNING SPACES SHALL BE 5% MAXIMUM.
- (5) THE FACE OF PEDESTRIAN PUSH BUTTONS SHALL BE OFFSET 0" FOR FRONT APPROACH AND 10" MAX. FOR SIDE APPROACH TO THE CURB FACE.
- (6) ENSURE THAT THE INSIDE EDGE OF CURVED RAMPS MAINTAIN AN 8.3% (1V:12H) MAXIMUM SLOPE.



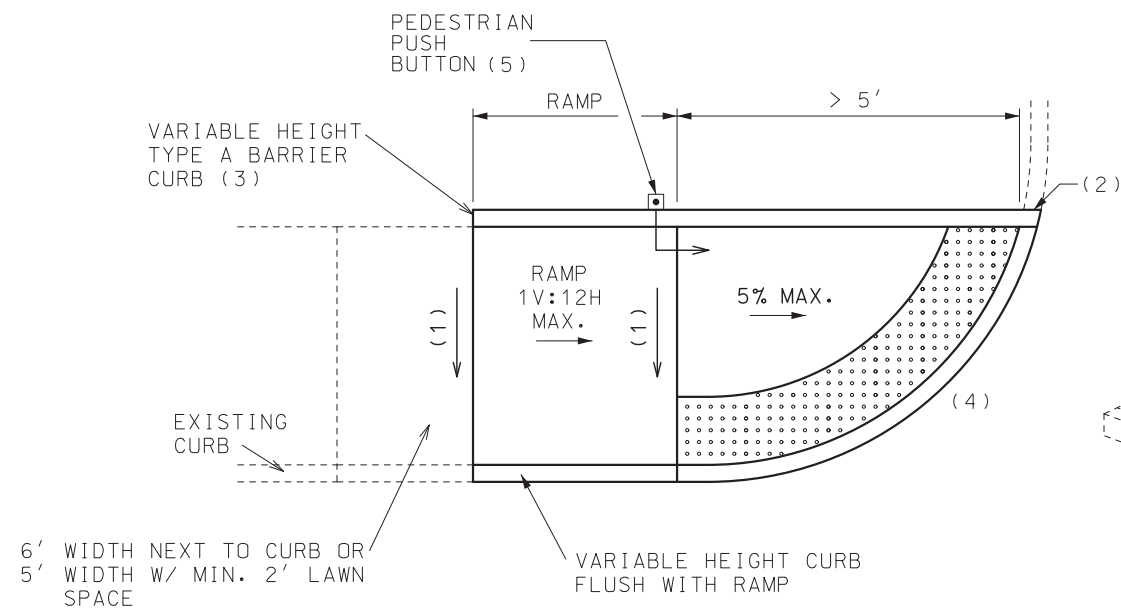
TYPE 3 PARALLEL

 <p><b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b></p> <p>105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)</p>	
 <p>STATE OF MISSOURI TRAVIS D. KOESTNER NUMBER PE-30042 PROFESSIONAL ENGINEER</p> <p>THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</p>	<p><b>CURB RAMPS</b></p>
<p>DATE EFFECTIVE: 01/01/2023</p> <p>DATE PREPARED: 10/6/2022</p>	<p>SHEET NO. <b>608.50A</b> 2 of 4</p>

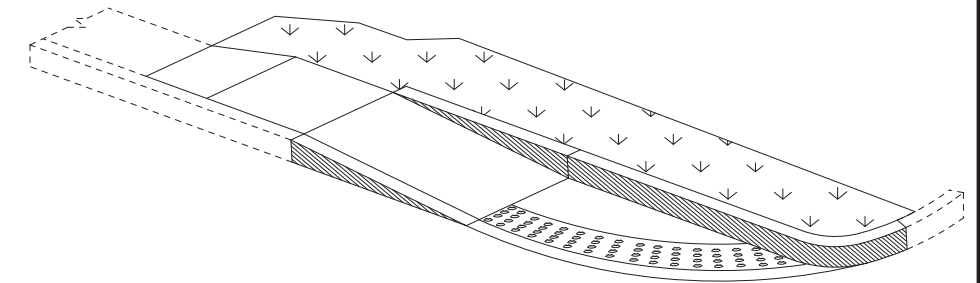
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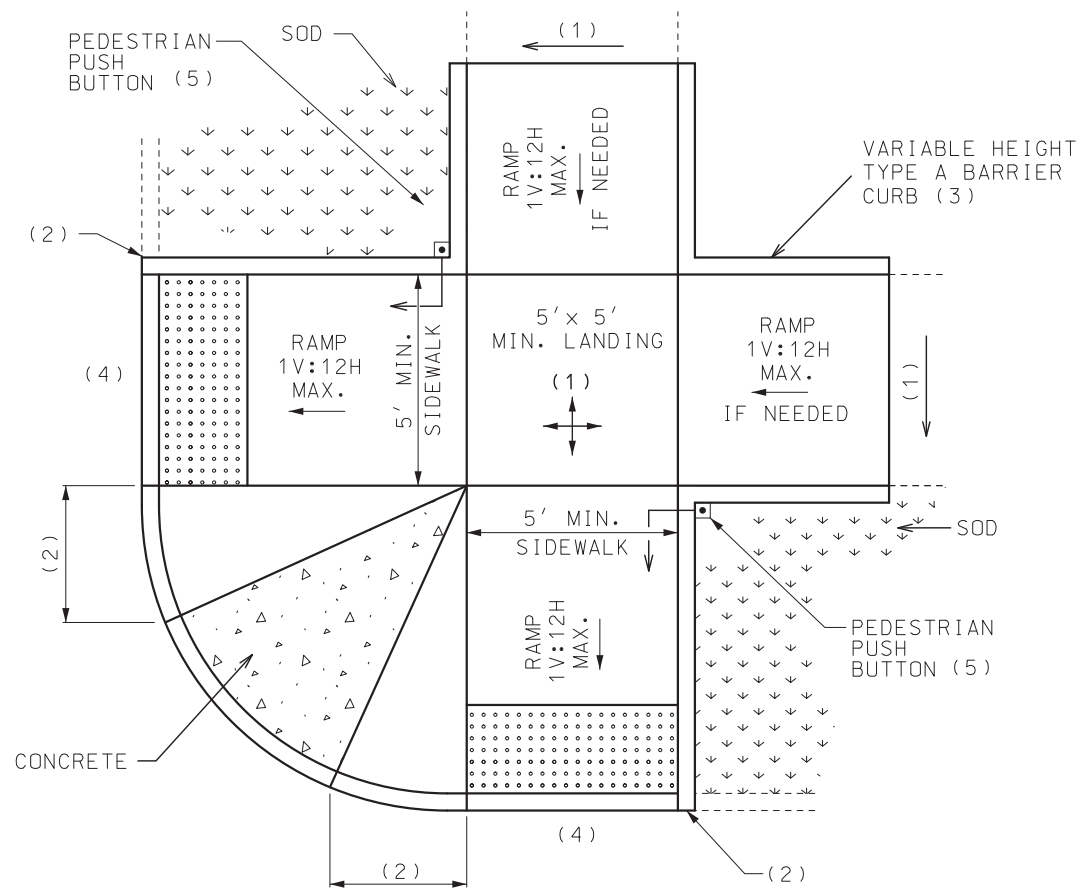
SMALL RADIUS PERPENDICULAR



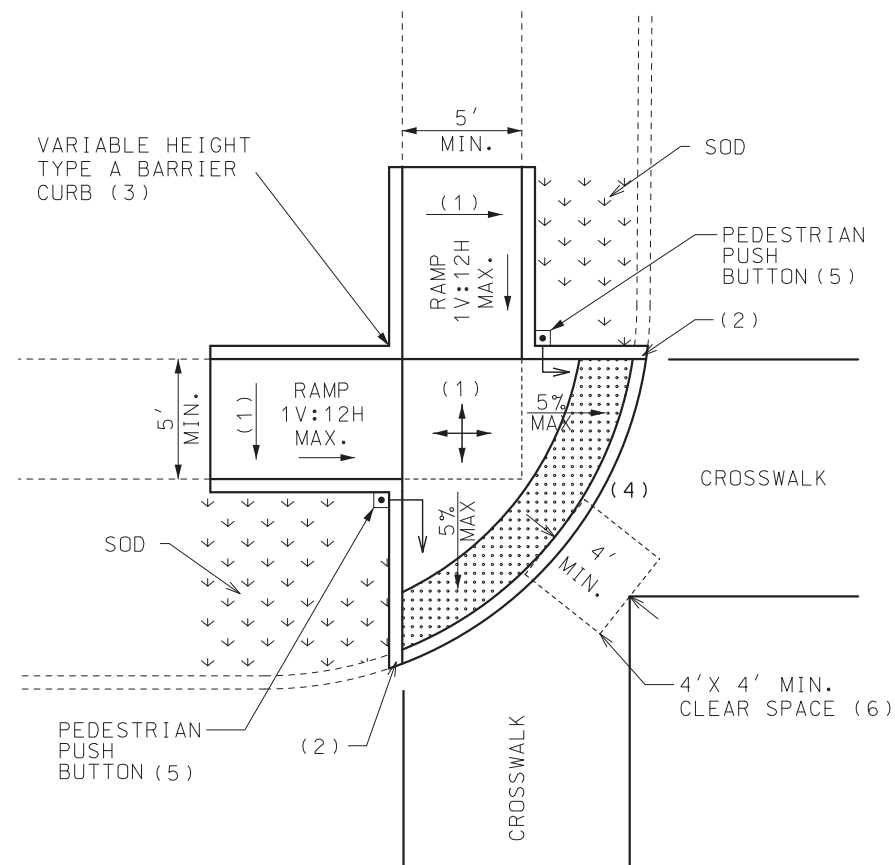
LARGE RADIUS PERPENDICULAR



ISOMETRIC VIEW  
LARGE RADIUS PERPENDICULAR





DUAL PERPENDICULAR

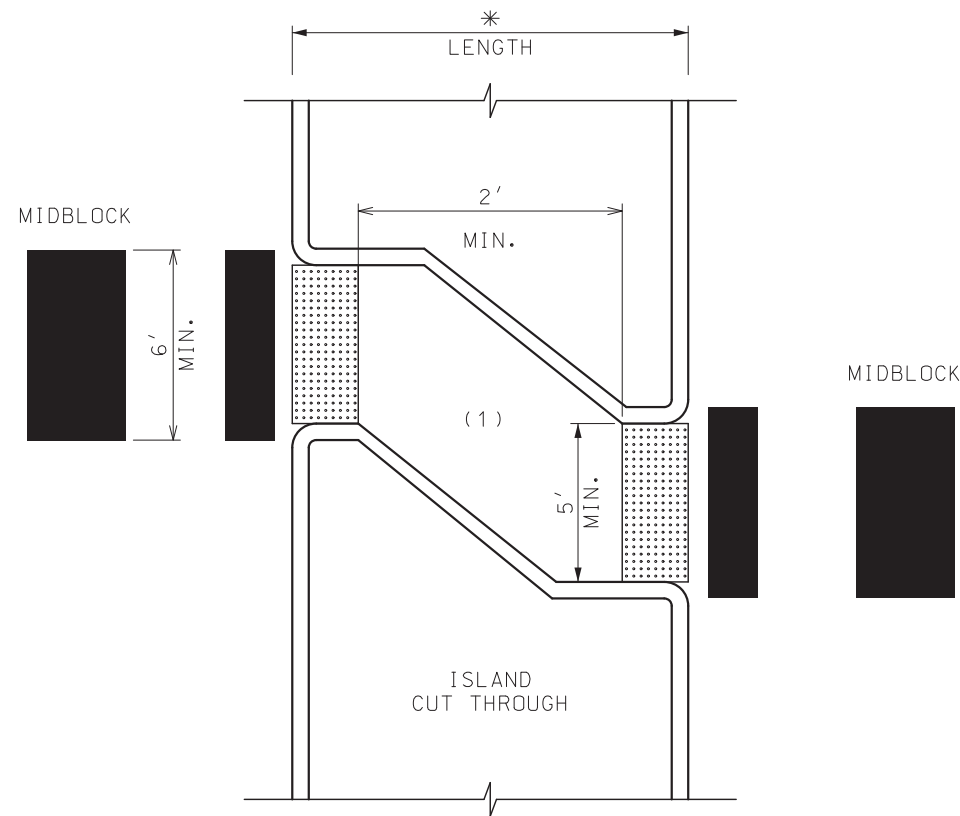


BLENDED TRANSITION

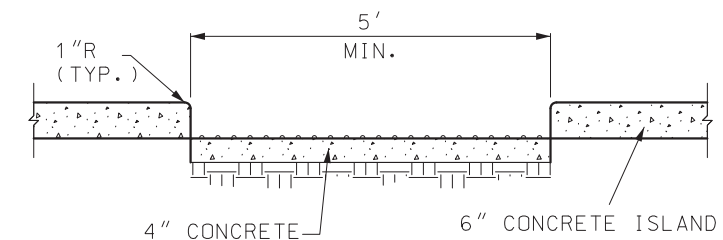
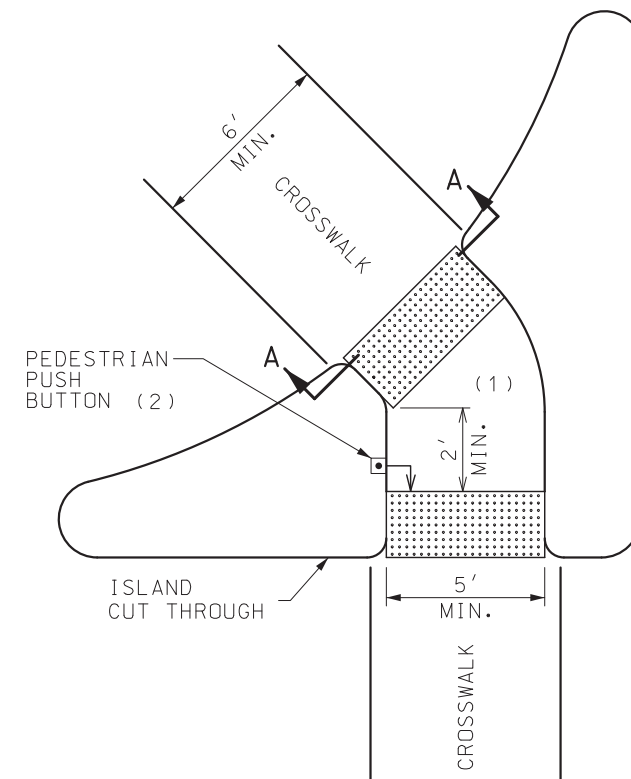
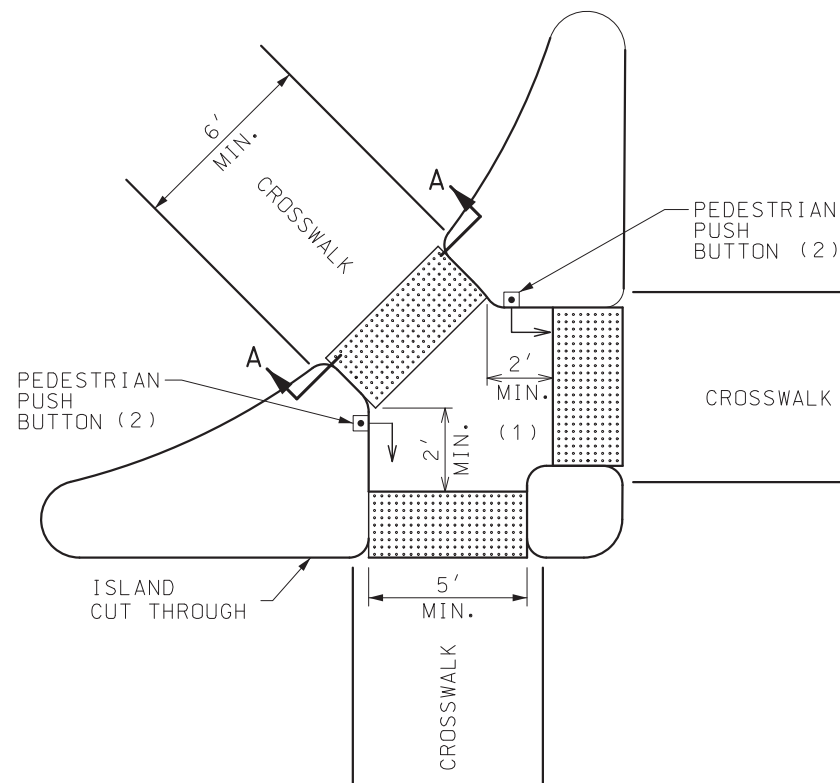
GENERAL NOTES:

- (1) 1.0% MINIMUM, 2.0% MAXIMUM CROSS SLOPE.
- (2) VARIABLE HEIGHT VERTICAL CURB. IF TRAVERSABLE USE A MAX. 1V:10H FLARE MEASURED PARALLEL TO THE CURB LINE.
- (3) HEIGHT VARIES TO MEET EXISTING GROUND.
- (4) THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE FOOT OF CURB RAMP RUNS, BLENDED TRANSITIONS, AND TURNING SPACES SHALL BE 5% MAXIMUM.
- (5) THE FACE OF PEDESTRIAN PUSH BUTTONS SHALL BE OFFSET 0" FOR FRONT APPROACH AND 10" MAX. FOR SIDE APPROACH TO THE CURB FACE.
- (6) BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE 4'X 4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE.

 <b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p>THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</p> </div> <div style="text-align: center;"> <h2 style="margin: 0;">CURB RAMPS</h2> </div> </div>		
DATE EFFECTIVE: 01/01/2023 DATE PREPARED: 10/6/2022	<h1 style="margin: 0;">608.50A</h1>	SHEET NO. <b>3 of 4</b>



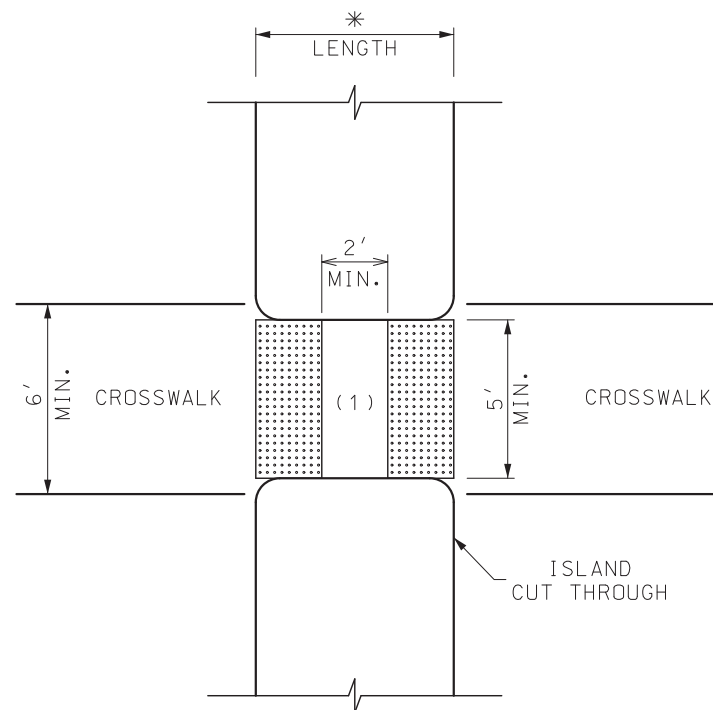
MIDBLOCK



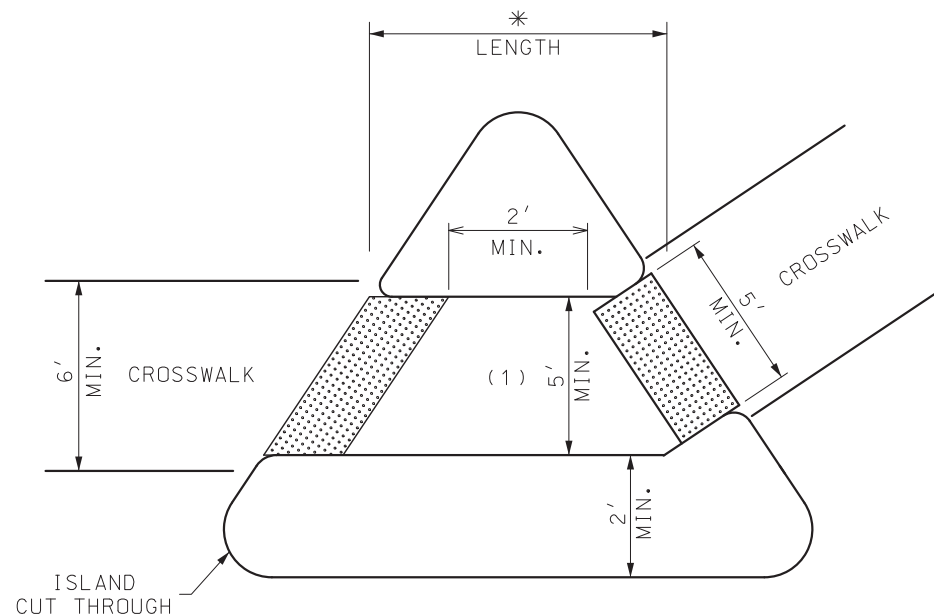
SECTION A-A  
ISLAND CUT THROUGH TYPICAL

RAMP OR CUT-THROUGH DEPENDING ON ISLAND WIDTH. IF RAMPED, PROVIDE 4' MINIMUM LANDING AND SLOPE RAMPS AT 1V:12H MAX.

RAMP MUST BE CONSTRUCTED TO DRAIN TO THE OUTSIDE.


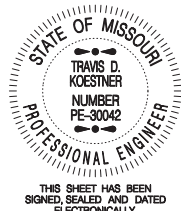


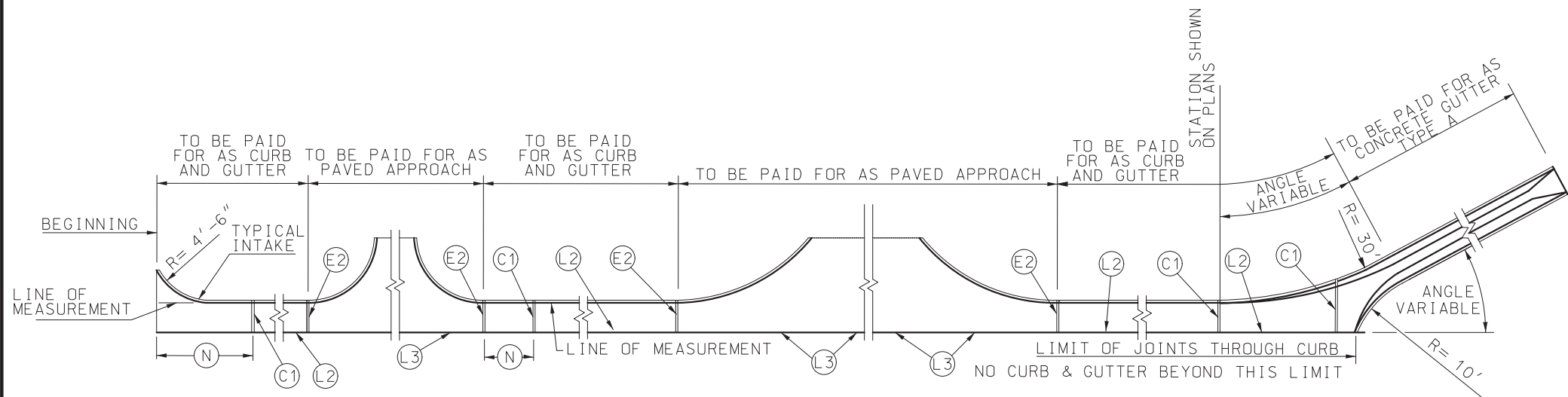
ISLAND CUT THROUGHS



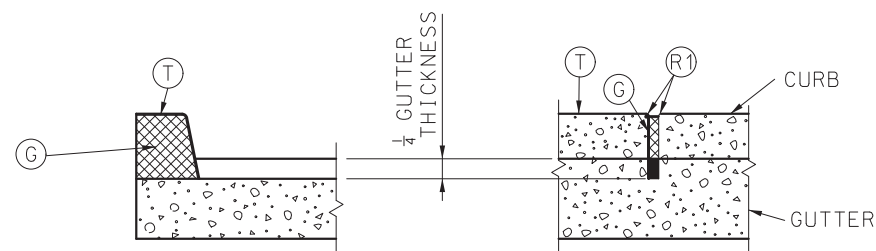
- (1) DETECTABLE WARNING SURFACES SHALL BE PLACED AT THE EDGES OF THE PEDESTRIAN ISLAND AND SHALL BE SEPARATED BY 2' MIN. LENGTH OF SURFACE WITHOUT DETECTABLE WARNINGS.
- (2) PEDESTRIAN PUSH BUTTONS SHALL BE OFFSET 0" FOR FRONT APPROACH AND 10" MAX. FOR SIDE APPROACH TO THE CURB FACE.

\* DETECTABLE WARNING SURFACES SHALL BE OMITTED IF LENGTH IS < 6', BECAUSE REFUGE SPACE IS DEEMED TOO SMALL.

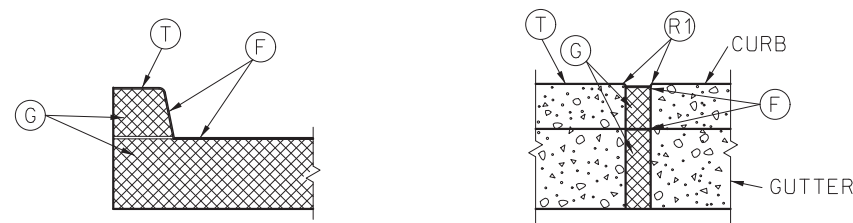
 <b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
	<b>CURB RAMPS</b>
DATE EFFECTIVE: 01/01/2023 DATE PREPARED: 10/6/2022	<b>608.50A</b>
SHEET NO. 4 of 4	



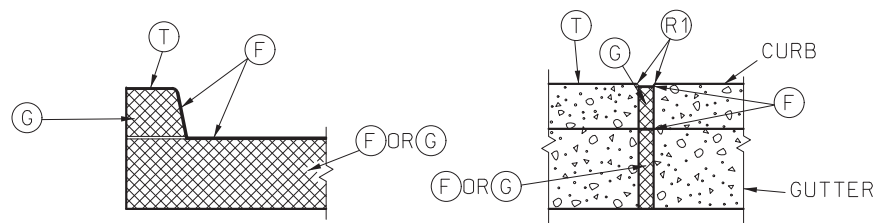
PLAN OF MEASUREMENT OF CURB & GUTTER AND JOINT PLAN



C1 JOINT



E1 JOINT



E2 JOINT

LEGEND

- C1  $\frac{1}{8}$ " MAXIMUM WIDTH TRANSVERSE CONTRACTION JOINT (PREFORMED OR SAWED).
- E1 2" TRANSVERSE EXPANSION JOINT (PREFORMED OR SAWED).
- E2  $\frac{1}{2}$ " TRANSVERSE EXPANSION JOINT (PREFORMED OR SAWED).
- F FILLER FOR JOINTS - HOT POURED.
- G PREFORMED JOINT FILLER MATERIAL.
- L2 LONGITUDINAL JOINT WITH TIE BARS.
- L3 LONGITUDINAL JOINT WITHOUT TIE BARS.
- N NOT LESS THAN 10' OR MORE THAN 30'.
- T TOP OF CURB.
- R1 ROUND TO  $\frac{1}{4}$ " RADIUS (EXCEPT FOR SAWED JOINTS).

GENERAL NOTES:

A MINIMUM 4" TYPE 1 OR 5 AGGREGATE BASE SHALL BE PLACED BENEATH ALL CURB AND GUTTER SECTIONS AND INCLUDED WITHIN THE MAINLINE BASE PAY LIMITS.

WHEN CURBS ARE CONSTRUCTED DIRECTLY BENEATH GUARDRAIL, CURB HEIGHT SHALL BE 4 INCH BARRIER CURB, AS SHOWN ON STANDARD PLAN 606.00.

CURB, GUTTER AND CURB AND CUTTER CONSTRUCTED ALONG AND ATTACHED TO CONCRETE PAVEMENT OR BASE SHALL HAVE:

1. JOINT C1 ONE-QUARTER DEPTH OF CURB AND GUTTER THICKNESS AS A CONTINUATION OF EACH CONTRACTION JOINT IN THE BASE OR PAVEMENT.
2. JOINT E1 AS CONTINUATION OF 2" EXPANSION JOINT E IN THE CONCRETE BASE OR PAVEMENT SHALL EXTEND AND CONTINUE THROUGH THE CURB, CUTTER AND CURB AND GUTTER.
3. JOINT E2 THROUGH CURB AND CURB AND CUTTER AT THE BEGINNING AND END OF EACH PAVED APPROACH.

CURB, CURB AND GUTTER AND GUTTER CONSTRUCTED APART OR SEPARATED FROM CONCRETE BASE OR PAVEMENT OR AS A FORM FOR ASPHALTIC CONCRETE PAVEMENT SHALL HAVE A JOINT E2 ENTIRELY THROUGH THE CURB, CURB AND GUTTER AND GUTTER, AT THE BEGINNING AND END OF EACH "PAVED APPROACH" AND A JOINT C1 TO  $\frac{1}{4}$  DEPTH OF CURB AND GUTTER THICKNESS AT INTERVALS OF 30 FEET BETWEEN APPROACHES.

JOINTS E1 AND E2 THROUGH CURB SHALL BE FILLED WITH PREFORMED FILLER MATERIAL AND SEALED WITH HOT POURED FILLER FOR JOINTS.

JOINT E1 IN GUTTER SHALL BE FILLED WITH PREFORMED FILLER AND SEALED WITH HOT FILLER MATERIAL.


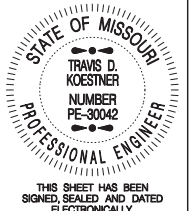
JOINT E2 IN GUTTER SHALL BE FILLED WITH PREFORMED FILLER AND SEALED WITH FILLER OR FILLED WITH HOT POURED FILLER.

PREFORMED FILLER MATERIAL SHALL BE PLACED TO PROVIDE 1" HOT POURED FILLER FOR JOINTS.

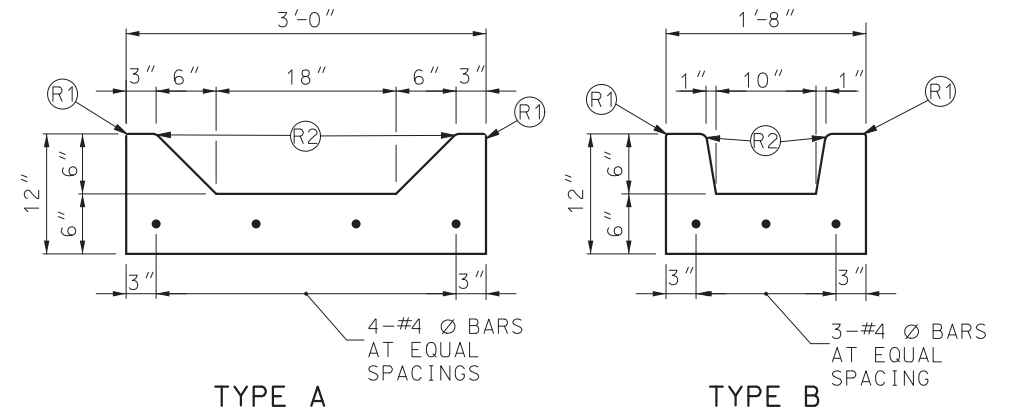
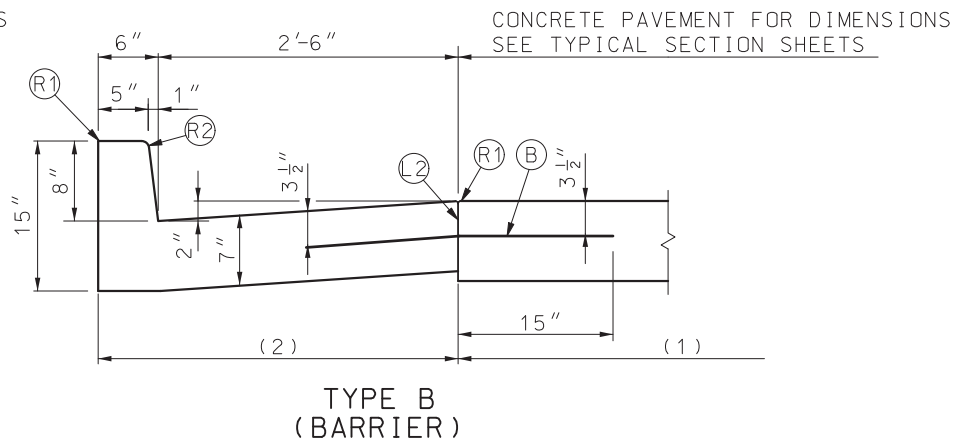
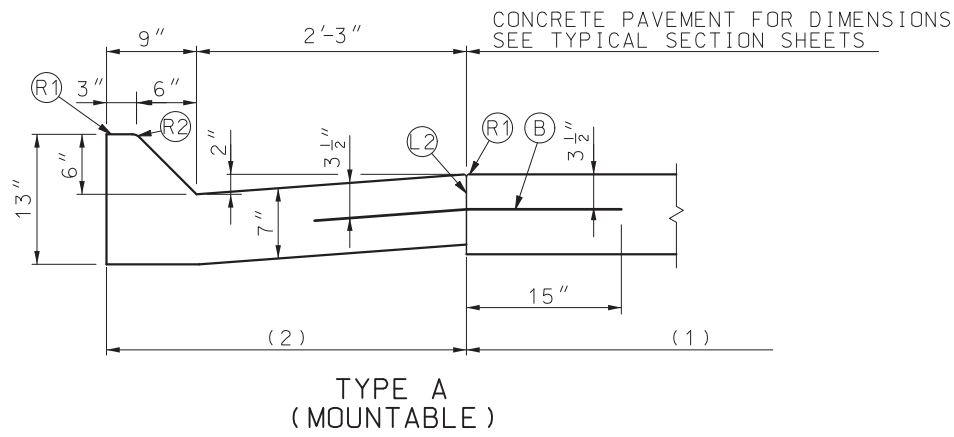
THE BARRIER CLASS CURBS MAY BE CONSTRUCTED WITHOUT BATTER WHEN CONSTRUCTED ON A RADIUS OF 6 FEET OR LESS. THE R2 WILL BE REQUIRED.

WHERE A SIDEWALK INTERSECTS A CURB, THE SIDEWALK SHALL BE RAMPED NO STEEPER THAN 12:1 SLOPE TO PROVIDED ACCESS FOR WHEELCHAIR ACROSS APPROACHES.

PRECAST TYPE A AND B GUTTER ARE ONLY ALLOWED WHEN CONSTRUCTABILITY ISSUES MAKE CAST IN PLACE NOT PRACTICAL. PRECAST IS ONLY ALLOWED WITH THE APPROVAL OF THE ENGINEER. WHEN ALLOWED BY THE ENGINEER, TYPES A AND B GUTTER MAY BE PRECAST TO CONFORM TO THE DIMENSIONS SHOWN. THE PRECASTER SHALL SUBMIT SHOP DRAWINGS INDICATING THE SECTION LENGTH, SECTION CONNECTION, AND PROPOSED JOINT SEALING SYSTEM. WHEN PRECAST SECTIONS CANNOT CONFORM TO ANY VERTICAL OR HORIZONTAL CURVE THEN CAST IN PLACE IS THE ONLY OPTION. A COMBINATION OF CAST IN PLACE AND PRECAST GUTTER MAY BE PERMITTED.

 <p><b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b></p> <p>105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)</p>	
 <p>STATE OF MISSOURI TRAVIS D. KOESTNER NUMBER PE-30042 PROFESSIONAL ENGINEER</p> <p>THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</p>	<p><b>CONCRETE CURB, CURB AND GUTTER AND GUTTER</b></p>
<p>DATE EFFECTIVE: 10/01/2022 DATE PREPARED: 7/19/2022</p>	<p><b>609.00Q</b></p>
<p>SHEET NO. 1 OF 2</p>	

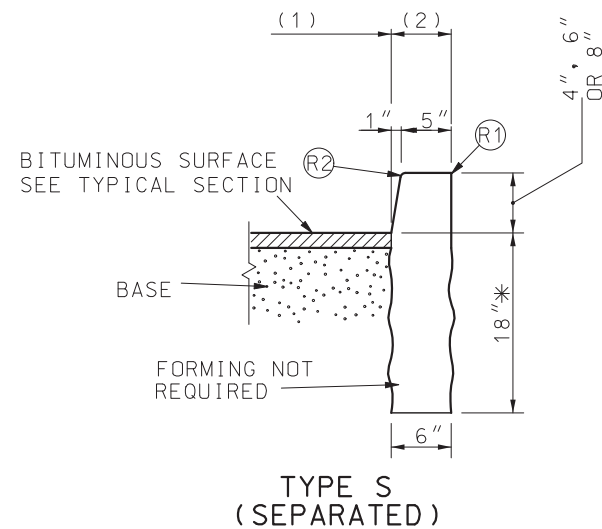
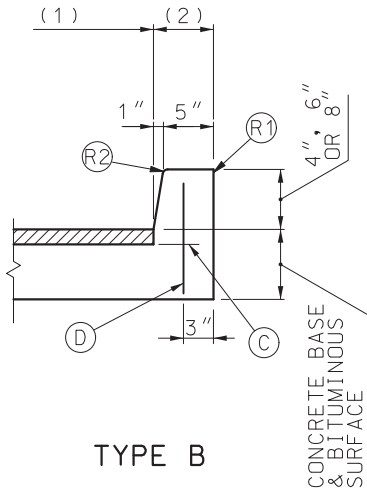
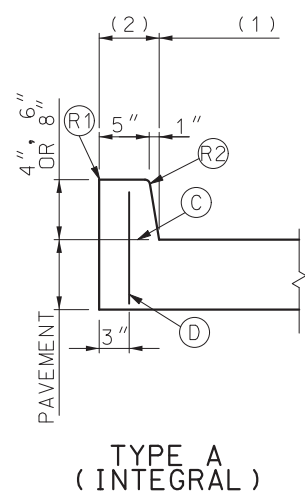
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



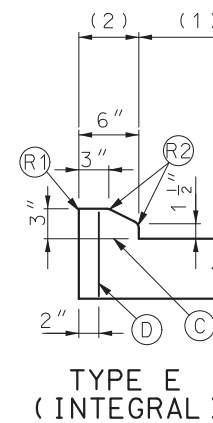
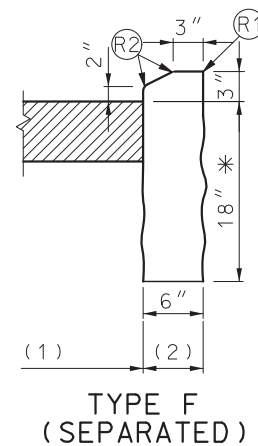
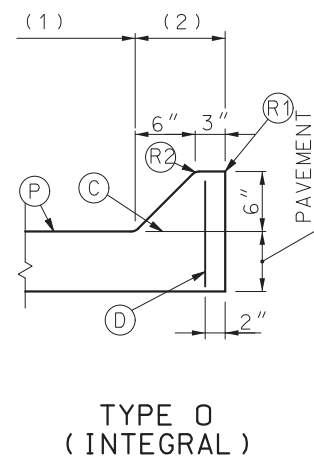
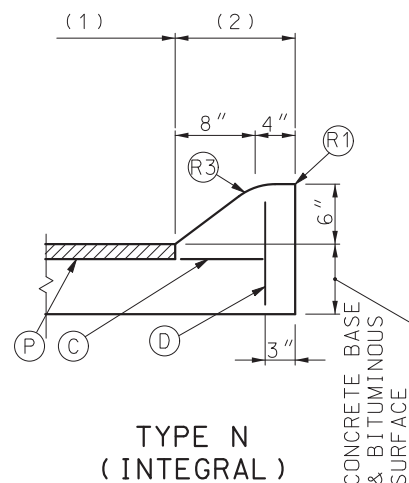
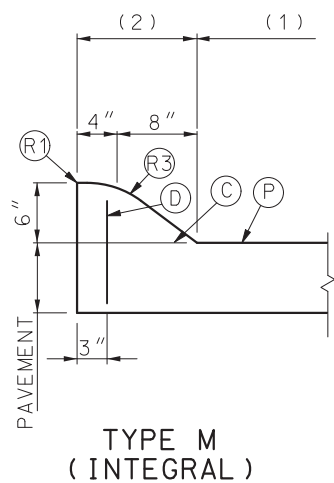
## CURB & GUTTER

## GUTTERS

SEE STANDARD PLAN 607.11 FOR MODIFIED TYPE A AND B GUTTERS



## BARRIER CURBS



BEGINNING AND ENDING OF INTRODUCED LOW PROFILE CURB SHALL UTILIZE CURB HEIGHT RUNOUT FORM 0 INCHES TO 3 INCHES IN 5 FEET. PAYMENT LENGTH SHALL INCLUDE TAPERS.  
\* DEPTH MAY BE REDUCED IF KEYED 6" IN ROCK.

## LOW PROFILE CURB

### LEGEND

- (B) TIE BARS - 30" X #5 Ø AT 30" CTRS.
- (C) PERMISSIBLE CONSTRUCTION JOINT. IF CONSTRUCTED IN THIS MANNER TIE BARS MUST BE USED.
- (D) #4 Ø TIE BAR AT 24" CENTERS LENGTH OF THE TIE BARS EQUALS THICKNESS OF PAVEMENT PLUS HEIGHT OF CURB, LESS 3 INCHES.
- (L2) LONGITUDINAL JOINT WITH TIE BARS.
- (P) TOP OF PAVEMENT OR CONCRETE BASE.
- (R1) ROUND TO 1/4" RADIUS (EXCEPT FOR SAWED JOINTS).
- (R2) ROUND TO 3/4" RADIUS.
- (R3) CONSTRUCT TO 9" RADIUS.
- (1) PAY LIMIT FOR PAVEMENT
- (2) PAY LIMIT FOR CURB, OR CURB & GUTTER.


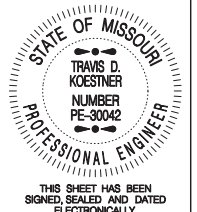
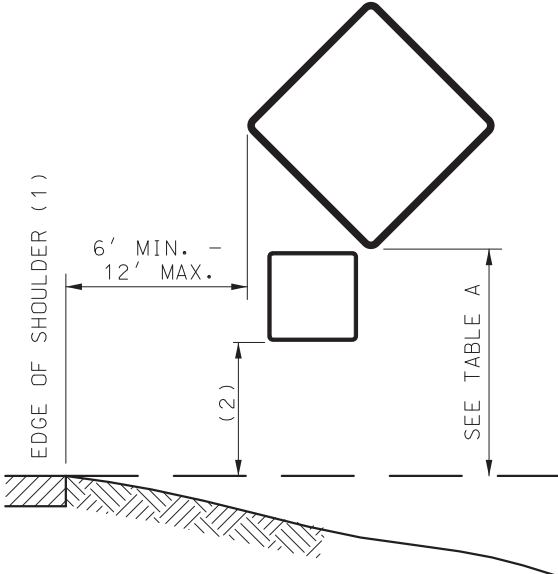
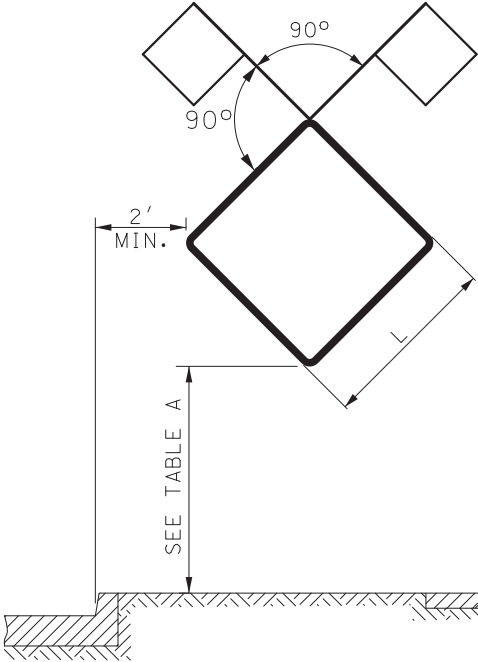


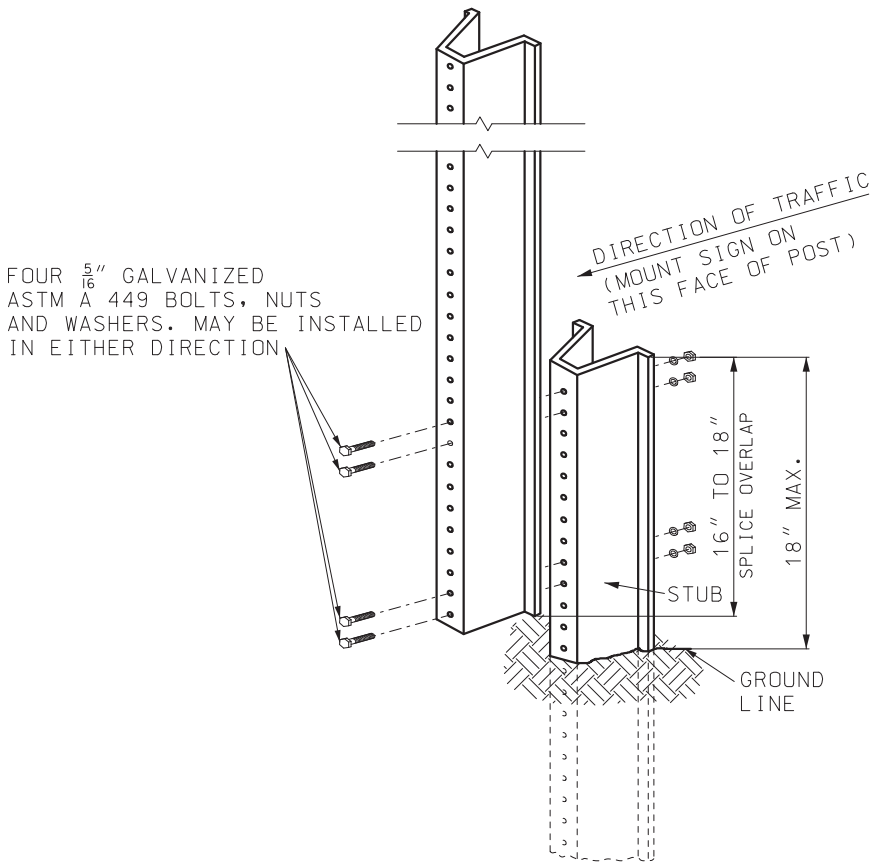
		<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b>	
		105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
		<b>CONCRETE CURB, CURB AND GUTTER AND GUTTER</b>	
DATE EFFECTIVE: 10/01/2022 DATE PREPARED: 7/19/2022		609.00Q	SHEET NO. 2 OF 2

TABLE A WORK ZONE SIGN MOUNTING REQUIREMENTS						<div>(3) MEASURED FROM THE BOTTOM OF THE SIGN TO THE NEAR EDGE OF THE PAVEMENT.</div> <div>(4) MOUNTING HEIGHTS FOR REGULATORY AND GUIDE SIGNS SHALL BE AS SPECIFIED FOR POST-MOUNTED SIGNS.</div> <div>(5) SIGNS MOUNTED ON TYPE III BARRICADES, GORE EXIT SIGN, AND SIGNS FOR CROSSWALK/ SIDEWALK CLOSURES MAY BE LEFT IN PLACE FOR MORE THAN 3 DAYS.</div> <div>(6) DEVIATIONS AS APPROVED BY THE ENGINEER.</div>
TYPE	SIGN SUPPORT	SIGN SUBSTRATE	MINIMUM MOUNTING HEIGHT(3)	USAGE LIMITATIONS	COMMENTS	
POST	PERFORATED SQUARE STEEL TUBE U-CHANNEL WOOD	RIGID	5' RURAL UNDIVIDED HIGHWAYS 7' RURAL DIVIDED HIGHWAYS 7' URBAN HIGHWAYS	NONE	POSTS SHALL BE FREE OF ANY BRACING AND EXTEND NO FURTHER ABOVE THE SIGN EXCEPT AS NEEDED FOR WARNING LIGHT ATTACHMENT. FOR DETAILS OF POST INSTALLATION DETAILS SEE SHEET NO. 2 OF 9. GALVANIZATION OF POSTS WILL NOT BE REQUIRED.	
TYPE 1 PORTABLE	SKID FOLD-UP STAND	RIGID	5' RURAL UNDIVIDED HIGHWAYS 7' RURAL DIVIDED HIGHWAYS 7' URBAN HIGHWAYS	PERMITTED ONLY WHERE POST MOUNTING IS NOT FEASIBLE.	SYSTEMS SHALL COMPLY WITH CRASH TEST REQUIREMENTS OF NCHRP 350 OR MASH 2016 TL-3 AND MAY BE PLACED ADJACENT TO OR WITHIN THE ROADWAY PROVIDED A MINIMUM LATERAL CLEARANCE OF 3 FEET, MEASURED HORIZONTALLY FROM THE EDGE OF THE SIGN TO THE EDGE OF DESIGNATED TRAVELED WAY, IS MAINTAINED.	
TYPE 2 PORTABLE	EASEL FOLD-UP STAND SELF-DRIVING POST TYPE III MOVABLE BARRICADE SKID	FLEXIBLE RIGID	12" (4)	PERMITTED FOR PROGRESSIVE WORK SUCH AS ASPHALT OVERLAYS. PERMITTED FOR STATIONARY WORK EXPECTED TO BE COMPLETED IN 3 DAYS OR LESS. PERMITTED FOR INTERMEDIATE/DIS-CONTINUOUS STATIONARY WORK THAT MAY EXCEED 3 DAYS IN TOTALITY, AS APPROVED BY THE ENGINEER.(5) WHERE SIGNS ARE OBSCURED BY OTHER OBJECTS (I.E., TRAFFIC CONTROL DEVICES, PARKED VEHICLES, BARRIERS, VEGETATION, ETC.) OR INSTALLED ON MULTI-LANE UNDIVIDED FACILITIES OR MULTILANE DIVIDED FACILITIES WITH 3 OR MORE LANES IN ONE DIRECTION, MOUNTING HEIGHTS SHALL BE AS SPECIFIED FOR POST-MOUNTED SIGNS.	SYSTEMS SHALL COMPLY WITH CRASH TEST REQUIREMENTS OF NCHRP 350 OR MASH 2016 TL-3 AND MAY BE PLACED ADJACENT TO OR WITHIN THE ROADWAY PROVIDED A MINIMUM LATERAL CLEARANCE OF 3 FEET, MEASURED HORIZONTALLY FROM THE EDGE OF THE SIGN TO THE EDGE OF DESIGNATED TRAVELED WAY, IS MAINTAINED.	
BARRIER	CONCRETE TRAFFIC BARRIER GUARDRAIL	FLEXIBLE RIGID	5' RURAL UNDIVIDED HIGHWAYS 7' RURAL DIVIDED HIGHWAYS 7' URBAN HIGHWAYS	PERMITTED ONLY WHERE LONGITUDINAL BARRIER IS PRESENT.	SYSTEMS SHALL PROVIDE POSITIVE CONNECTION TO THE BARRIER AND MINIMIZE POTENTIAL FOR VEHICLE SNAGGING.	
VEHICLE	PAVEMENT MARKING EQUIPMENT PILOT CAR PROTECTIVE VEHICLE	FLEXIBLE RIGID	48" (6)	PERMITTED ONLY IN PILOT CAR OR MOVING OPERATIONS.		
<div><div><p>(1) EDGE OF TRAVELED WAY WHERE THERE IS NO PAVED OR STABILIZED SHOULDER.</p><p>(2) ONE-FOOT LESS THAN MOUNTING HEIGHT NOTED IN TABLE A.</p></div><div></div></div> <div>HEIGHT AND LATERAL LOCATIONS FOR POST AND PORTABLE SIGN MOUNTING</div>						<div>GENERAL NOTES:</div> <div>LONGITUDINAL SPACING OF SIGNS SHOWN IN THE PLANS ARE PREFERRED MINIMUMS, BUT MAY BE ADJUSTED TO MEET EXISTING FIELD CONDITIONS WITH APPROVAL FROM THE ENGINEER.</div> <div>SIGNS SHALL NOT BE MOUNTED IN OR ON CHANNELIZERS.</div> <div>ALL POSTS AND SIGNS SHALL BE INSTALLED AND MAINTAINED IN A PLUMB POSITION.</div> <div>CONSTRUCTION SIGNS SHALL NOT BE LOCATED ON SIDEWALKS, BICYCLE LANES, OR AREAS DESIGNATED FOR PEDESTRIAN OR BICYCLE TRAFFIC.</div> <div><div><div><div>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</div><div>105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)</div></div><div><div><div>THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</div></div><div>TEMPORARY TRAFFIC CONTROL DEVICES SIGN MOUNTING REQUIREMENTS</div></div><div><div>DATE EFFECTIVE: 01/01/2023</div><div>DATE PREPARED: 10/7/2022</div></div><div>616.10BA</div><div>SHEET NO. 1 OF 9</div></div></div>

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



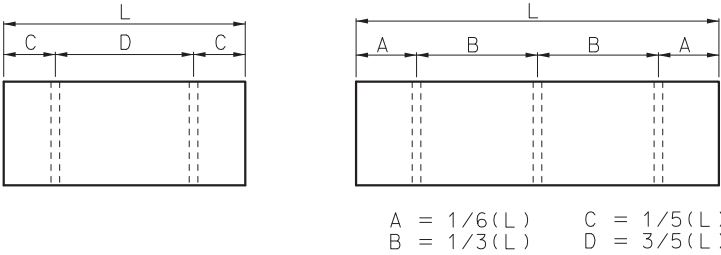
U-CHANNEL POST DETAIL

USE OF SPLICE IS OPTIONAL.

SPLICE OVERLAP SHALL BE POSITION ENTIRELY BETWEEN GROUND LINE AND 18" ABOVE GROUND LINE.

\* IF A PLAQUE IS USED, NEITHER THE SIGN NOR PLAQUE SHALL BE POSITIONED WITHIN THE SPLICE OVERLAP AREA.

ONLY ONE SPLICE WILL BE ALLOWED PER POST.

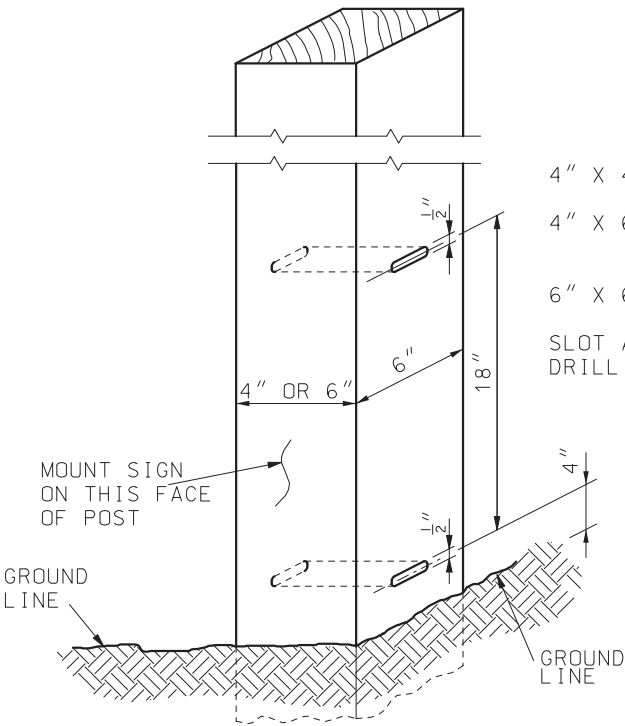


POST SPACING

SIGN AREA (SQ.FT.)	POST TYPE		
	U-CHANNEL	WOOD	PERFORATED SQUARE STEEL TUBING
≤ 10	1 - 3.0 LB./FT.*	1 - 4" X 4"*	1 - 2" 12 GA.*
> 10 ≤ 16	2 - 3.0 LB./FT.	2 - 4" X 4" 1 - 4" X 6"*	2 - 2" 12 GA. 1 - 2 1/2" 12 GA.
> 16 ≤ 24	2 - 3.0 LB./FT.	2 - 4" X 6"	3 - 2" 12 GA.**
> 24 ≤ 32	3 - 3.0 LB./FT.	2 - 4" X 6"	N/A
> 30 ≤ 50	N/A	2 - 6" X 6"	N/A

\* SIGNS GREATER THAN 4 FEET IN WIDTH, EXCEPT DIAMOND SHAPE SIGNS, REQUIRE TWO POSTS.

\*\* REQUIRES SLIP BASE PER MANUFACTURER'S RECOMMENDATION.



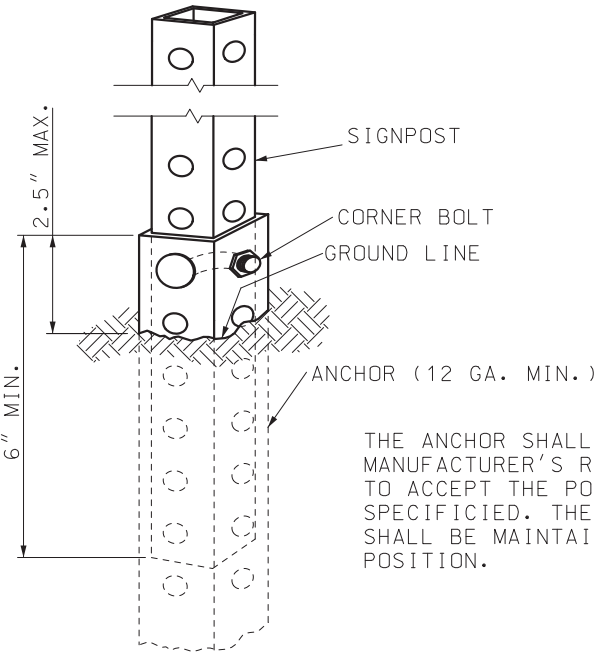
WOOD POST DETAIL

4" X 4" WOOD POST - NO SLOTS OR HOLES REQUIRED

4" X 6" WOOD POST - 1 1/2" X 1/2" SLOT ON 6" SIDE OR 1 1/2" DIA. HOLE ON 6" SIDE

6" X 6" WOOD POST - 2" X 1/2" SLOT OR 2" DIA. HOLE

SLOT ACROSS NEUTRAL AXIS FORMED BY SUCCESSIVE DRILLING WITH 1/2" BIT.



PERFORATED SQUARE STEEL TUBE POST DETAIL


THE SIGN POST MAY BE ATTACHED TO THE ANCHOR WITH A CORNER BOLT OR STRAIGHT BOLT PER MANUFACTURER'S SPECIFICATION.

GENERAL NOTES:

ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 3 FEET.


SIGN INSTALLATION DETAILS SHOWN SHALL APPLY TO ALL POSTS IN A MULTI-POST INSTALLATION.

AT THE ENGINEERS DISCRETION A FLUORESCENT PAINT SHALL BE APPLIED HEAVILY TO BOTH SIDES OF U-CHANNEL POST STUB FOR A LENGTH OF AT LEAST 6 INCHES BELOW THE TOP OF THE STUB.



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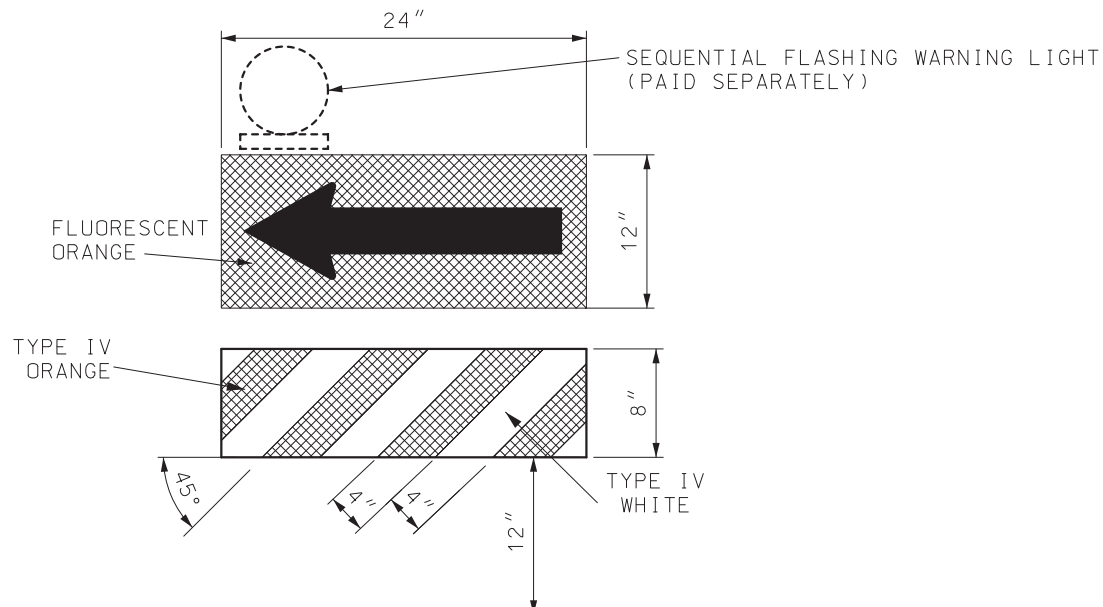
TEMPORARY TRAFFIC CONTROL DEVICES POST INSTALLATION DETAILS

DATE EFFECTIVE: 10/01/2022  
DATE PREPARED: 7/20/2022

616.10AZ

SHEET NO.  
2 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

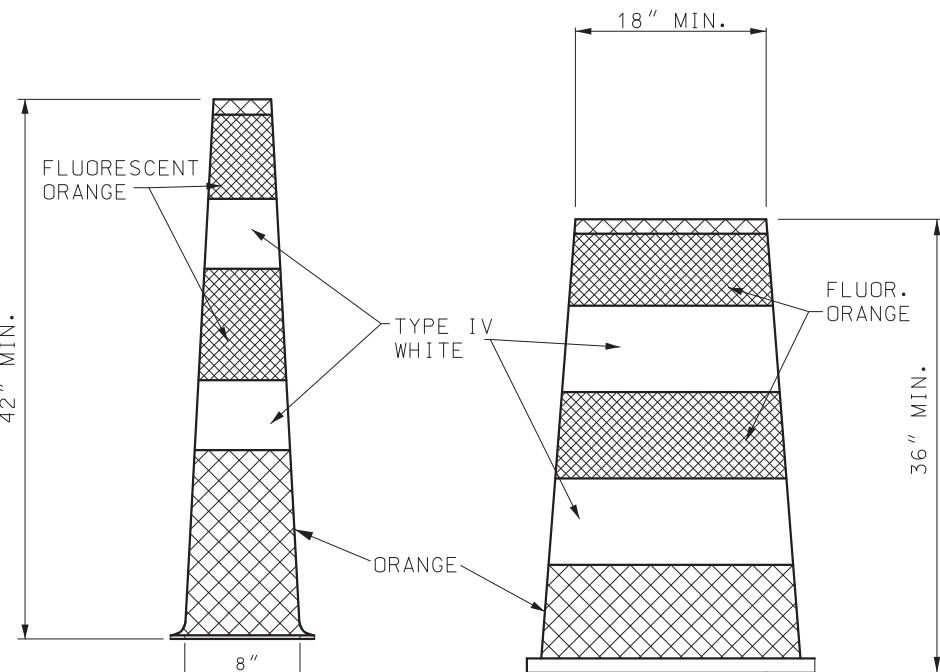


**DIRECTION INDICATOR BARRICADE**

VERTICAL DIMENSIONS DO NOT INCLUDE PROJECTIONS DESIGNED FOR EASE OF HANDLING.

DIRECTION INDICATOR BARRICADES SHALL NOT BE USED IN SHIFTING TAPERS UNLESS SHOWN ON THE PLANS.

THE PANELS SHALL BE SECURELY ATTACHED TO A SUPPORT THAT IS PORTABLE, CAPABLE OF REMAINING UPRIGHT AND ENTIRELY FREE STANDING.

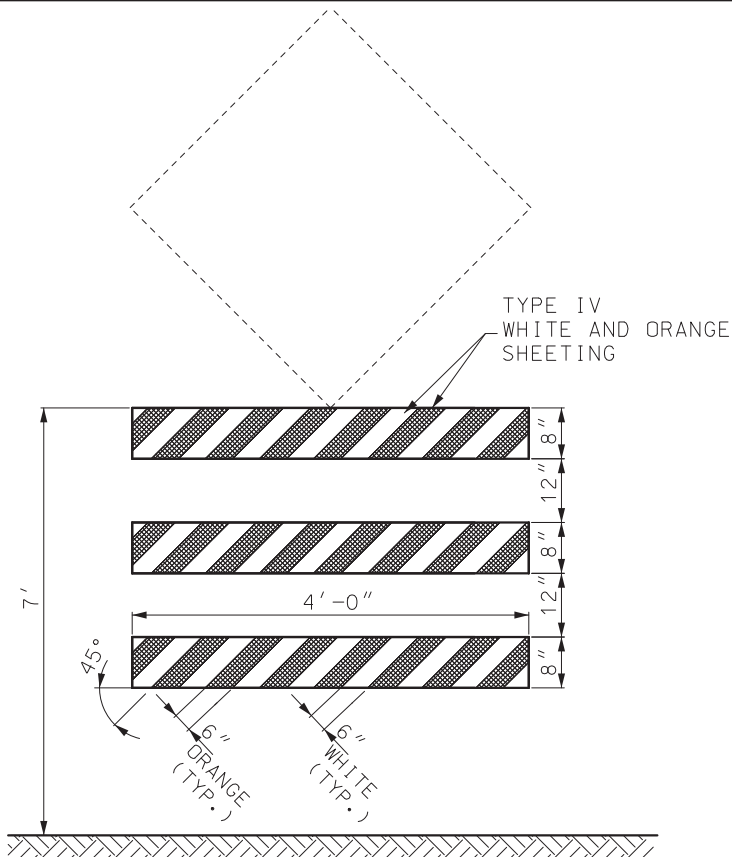


**TRIM-LINE CHANNELIZERS**

WHITE, ORANGE, AND FLUORESCENT ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.3.

**DRUM-LIKE**

STRIPES ON TRIM-LINE CHANNELIZERS SHALL BE 6" TO 8".  
STRIPES ON DRUM-LIKE CHANNELIZERS SHALL BE 4" TO 6".



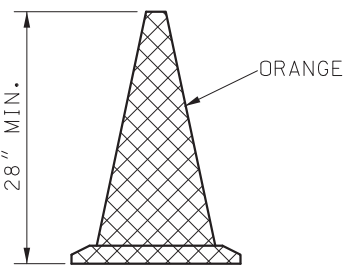
**ADVANCE WARNING RAIL SYSTEM**

MAXIMUM WEIGHT OF SIGN SHALL NOT EXCEED 25 LBS.

THE SIGN AND RAIL SYSTEM MAY BE MOUNTED AS TWO SEPARATE CRASHWORTHY DEVICES. THE RAIL SYSTEM SHALL BE LOCATED DIRECTLY IN FRONT OF THE SIGN WITH 7 TO 10 FEET SEPARATING THE TWO DEVICES.

WHERE MARKING IS NOT PROVIDED ON THE BACKSIDE, STRIPS OF 3" WIDE MODOT TYPE 7 ORANGE SHEETING MAY BE APPLIED TO THE ENDS OF EACH RAIL TO HELP DELINEATE THE DEVICE.

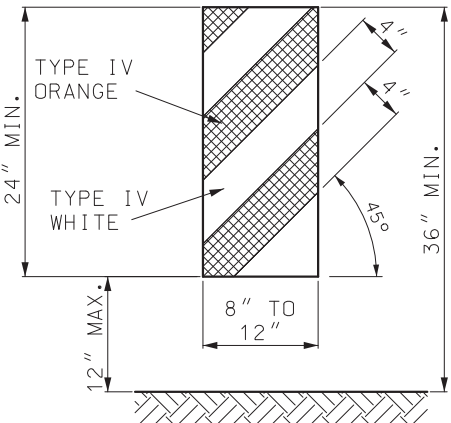
WHITE AND ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.4.



**CONE**

CONES SHALL MAINTAIN THEIR SHAPE UPON EXPOSURE TO NORMAL WORK CONDITIONS.

CONES SHALL BE USED DURING DAYLIGHT HOURS ONLY.



**VERTICAL PANEL**

VERTICAL PANELS SHALL BE SECURELY ATTACHED TO A SUPPORT THAT IS PORTABLE, CAPABLE OF REMAINING UPRIGHT AND ENTIRELY FREE STANDING.

GENERAL NOTES:

WHITE, ORANGE, AND FLUORESCENT ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.

BALLAST FOR TRAFFIC CONTROL DEVICES SHALL CONFORM TO MANUFACTURERS' RECOMMENDATION FOR FIELD CONDITIONS WHEN APPLICABLE.

SEQUENTIAL FLASHING WARNING LIGHTS SHALL BE IN ACCORDANCE WITH SEC 1063.5.



UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE DRUM-LIKE CHANNELIZERS IN LIEU OF TRIM-LINE CHANNELIZERS TO PROVIDE LONGITUDINAL CHANNELIZATION WITHIN THE ACTIVITY AREA WHERE NO RAMPS, INTERSECTIONS OR LIMITED LATERAL CLEARANCE EXISTS.

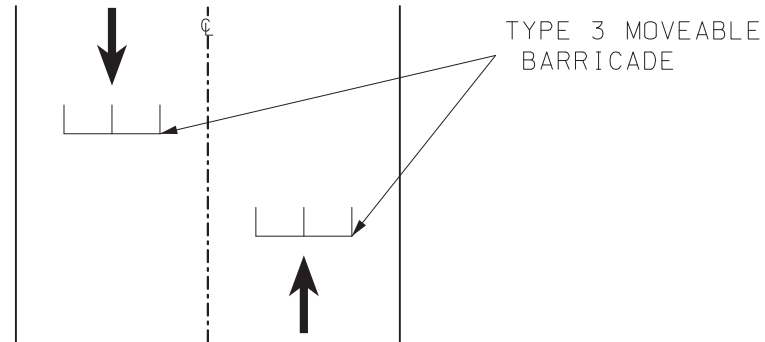
UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE DIRECTION INDICATOR BARRICADES IN LIEU OF TRIM-LINE CHANNELIZERS IN MERGING TAPERS.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE VERTICAL PANELS IN LIEU OF TRIM-LINE CHANNELIZERS TO PROVIDE LONGITUDINAL CHANNELIZATION WITHIN THE ACTIVITY AREA.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE CONES IN LIEU OF TRIM-LINE CHANNELIZERS DURING DAYTIME OPERATIONS ON MINOR ROUTES.

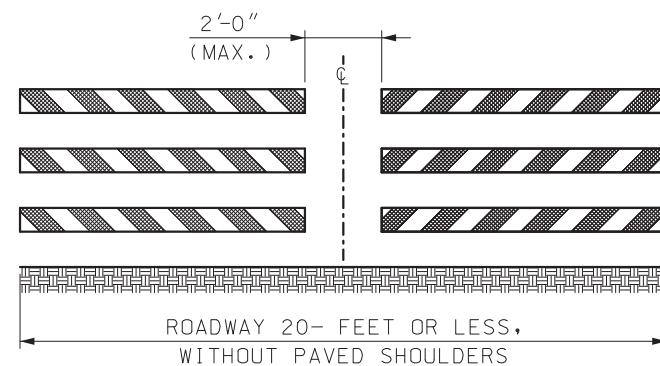
PANEL AND RAIL MARKINGS FOR TRAFFIC DELINEATION SHALL SLOPE DOWNWARD TOWARD THE INTENDED DIRECTION OF TRAVEL. ILLUSTRATIONS SHOWN ARE FOR INSTANCES WHERE TRAFFIC MOVES TO THE LEFT. REVERSE CONFIGURATIONS SHALL BE USED FOR TRAFFIC MOVEMENTS TO THE RIGHT. MARKINGS SHALL ONLY BE APPLIED TO THE FRONT OF EACH RAIL OR PANEL, OR MAY BE APPLIED TO BOTH THE FRONT AND BACK PROVIDING THE MARKING ON THE BACK DOES NOT CONFLICT WITH INTENDED OPPOSING TRAFFIC MOVEMENT.

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 <small>THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</small>	<b>TEMPORARY TRAFFIC CONTROL DEVICES CHANNELIZERS AND DIRECTION INDICATOR BARRICADE</b>		
	DATE EFFECTIVE: 10/01/2022 DATE PREPARED: 7/20/2022	616.10AZ	SHEET NO. 3 OF 9

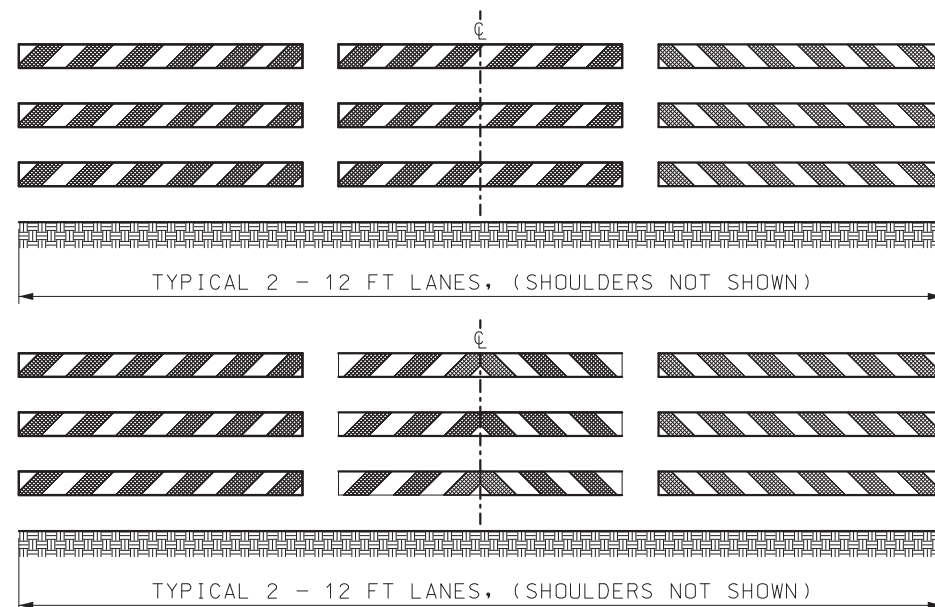


RETROREFLECTIVE MARKING ON TYPE 3 BARRICADES SHALL BE ON BOTH SIDES OF EACH RAIL AND DIRECT TRAFFIC MOVEMENT APPROPRIATELY TO ALLOW VEHICLES TO PASS THROUGH

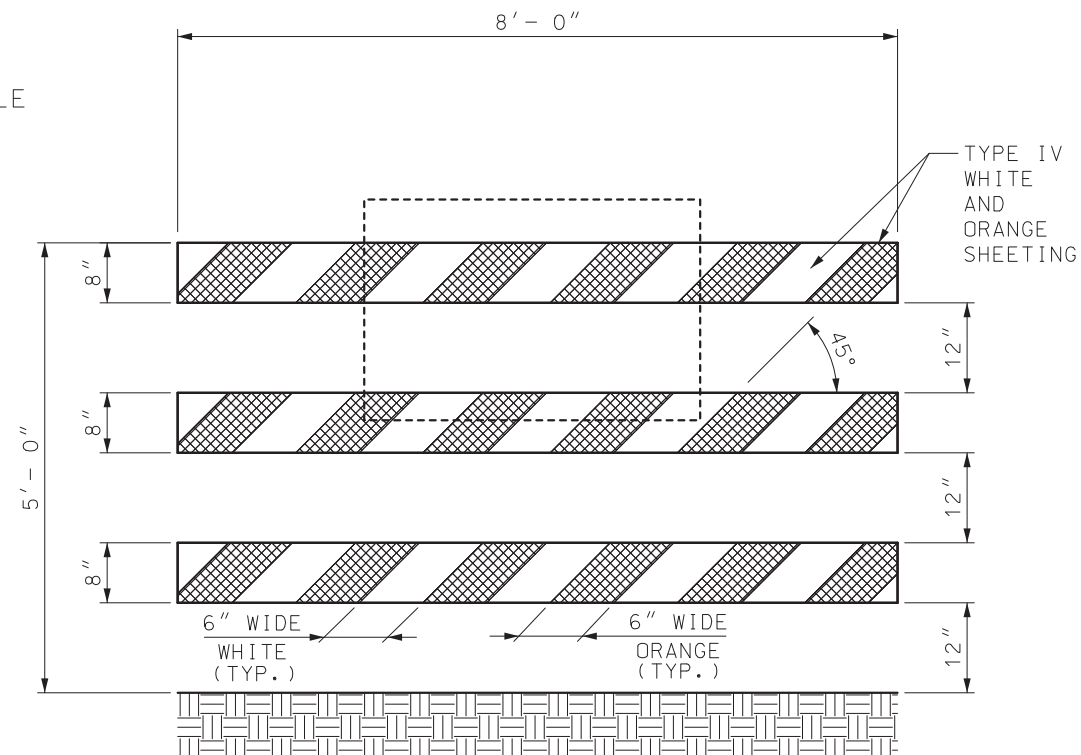
SOFT CLOSURE  
PLAN VIEW



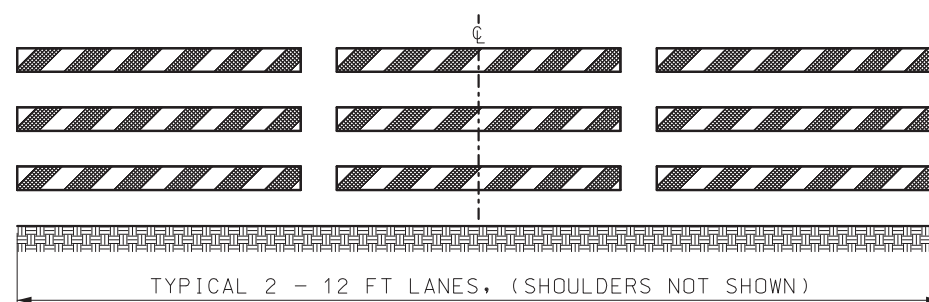
EXAMPLE 2



EXAMPLE 4

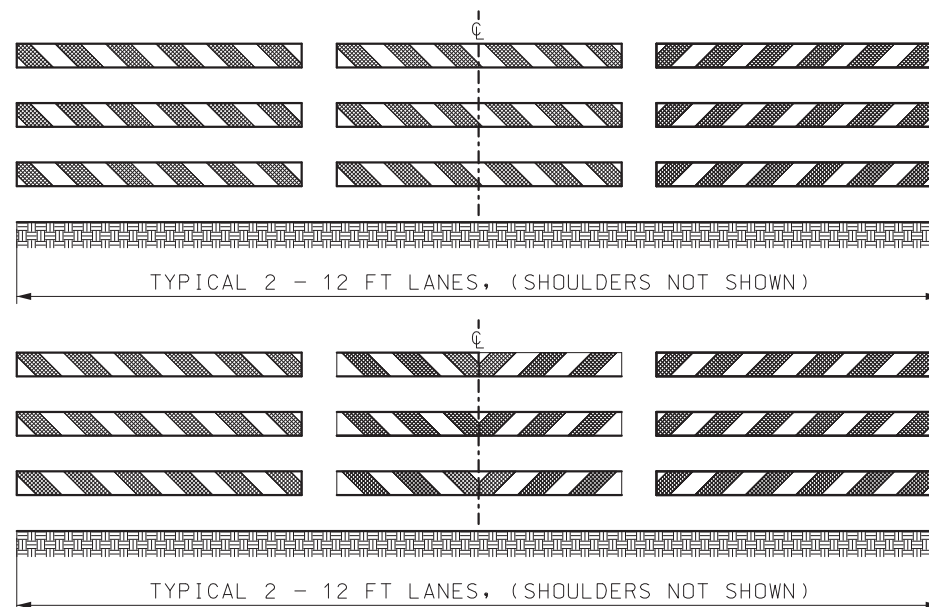


EXAMPLE 1



EXAMPLE SHOWS STRIPES SLOPING TO DIRECT VEHICULAR MOVEMENT TOWARD THE LEFT

EXAMPLE 3



EXAMPLE 5

EXAMPLE 1 – ONE TYPE 3 MOVABLE BARRICADE WILL BE REQUIRED TO COMPLETELY CLOSE EACH 8’ OF PAVEMENT. PAVED SHOULDERS SHALL BE INCLUDED IN THE AREA TO BE CLOSED.

SIGNS SHALL BE LIGHT WEIGHT (ROLL-UP OR PLASTIC) AND SHOULD NOT OBSCURE MORE THAN 50 PERCENT OF THE TOP 2 RAILS OR 33 PERCENT OF ALL THREE RAILS.

IF SIGNS CANNOT MEET THE ABOVE REQUIREMENTS, THEY SHALL BE MOUNTED ON SEPARATE CRASHWORTHY DEVICES AT HEIGHTS SPECIFIED FOR POST MOUNTED SIGNS, LOCATED IN TABLE A ON SHEET 1. THE BARRICADE SHALL BE LOCATED IN FRONT OF THE SIGNS WITH 7 TO 10 FEET SEPARATING THE DEVICES.

TYPE 3 MOVABLE BARRICADES SHALL BE ENTIRELY FREE STANDING AND PORTABLE. MARKING SHALL ONLY BE APPLIED TO THE FRONT OF EACH RAIL OR MAY BE APPLIED TO BOTH THE FRONT AND THE BACK OF EACH RAIL PROVIDED THE MARKING ON THE BACK DOES NOT CONFLICT WITH INTENDED OPPOSING TRAFFIC MOVEMENT.


WHITE AND ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 104.2.7.4.

EXAMPLE 2 – FOR PAVED ROADWAYS WITH A WIDTH OF 20- FEET OR LESS AND WITHOUT PAVED SHOULDERS, TWO BARRICADES ARE ACCEPTABLE.

EXAMPLE 3 – WHERE BARRICADES EXTEND ENTIRELY ACROSS A ROADWAY, STRIPES SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH ROAD USERS MUST TURN.

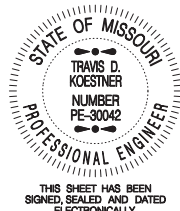
EXAMPLE 4 – WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED, STRIPES SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE OR BARRICADES.

EXAMPLE 5 – WHERE NO TURNS ARE INTENDED, STRIPES POSITIONED TO SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.



**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**

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JEFFERSON CITY, MO 65102  
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STATE OF MISSOURI  
TRAVIS D. KOESTNER  
NUMBER PE-30042  
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN  
SIGNED, SEALED AND DATED  
ELECTRONICALLY.

**TEMPORARY  
TRAFFIC CONTROL DEVICES**

**TYPE 3 MOVABLE BARRICADE**

DATE EFFECTIVE: 10/01/2022  
DATE PREPARED: 7/20/2022

616.10AZ

SHEET NO.  
4 OF 9

SIGN	SIZE (IN.)	AREA (SQ. FT.)	SHEETING	COLOR		DESIGNATION (6)	DESCRIPTION
				SYM. LEG. BRD.	BACK- GROUND		
WARNING SIGNS							
W01-1L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TURN (SYMBOL LEFT ARROW)
W01-1R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TURN (SYMBOL RIGHT ARROW)
W01-2L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	CURVE (SYMBOL LEFT ARROW)
W01-2R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	CURVE (SYMBOL RIGHT ARROW)
W01-3L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE TURN (SYMBOL LEFT ARROW)
W01-3R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE TURN (SYMBOL RIGHT ARROW)
W01-4L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE CURVE (SYMBOL LEFT ARROW)
W01-4R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE CURVE (SYMBOL RIGHT ARROW)
W01-4bL	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS) (2)
W01-4bR	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS) (2)
W01-4cL	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS) (2)
W01-4cR	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS) (2)
W01-6	60X30	12.50	ASTM 9 OR 11	BK	FL. OR	SHF	HORIZONTAL ARROW (SYMBOL)
W01-6a	72X36	18.00	ASTM 9 OR 11	BK	FL. OR	SHF	HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE) (1)
W01-7	60X30	12.50	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
W01-7a	72X36	18.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE HEAD HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE)(1)
W01-8	18X24	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	CHEVRON (SYMBOL)
W01-8a	30X36	7.50	ASTM 9 OR 11	BK	FL. OR	SHF	CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
W03-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	STOP AHEAD (SYMBOL)
W03-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	YIELD AHEAD (SYMBOL)
W03-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SIGNAL AHEAD (SYMBOL)
W03-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BE PREPARED TO STOP
W03-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SPEED LIMIT AHEAD
W04-1L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (SYMBOL FROM LEFT)
W04-1R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (SYMBOL FROM RIGHT)
W04-1a(L)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (ARROW SYMBOL) (3)
W04-1a(R)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (ARROW SYMBOL) (3)
W05-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD/BRIDGE/RAMP NARROWS (4)
W05-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ONE LANE BRIDGE
W05-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	NARROW LANES (3)
W06-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIVIDED HIGHWAY (SYMBOL)
W06-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIVIDED HIGHWAY END (SYMBOL)
W06-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TWO WAY TRAFFIC (SYMBOL)
W07-3a	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	NEXT XX MILES (PLAQUE)
W08-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BUMP
W08-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIP
W08-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	PAVEMENT ENDS
W08-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SOFT SHOULDER
W08-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SLIPPERY WHEN WET (SYMBOL)
W08-6	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRUCK CROSSING WITH FLAGS
W08-6c	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRUCK ENTRANCE (3)
W08-7a	36X36	9.00	ASTM 9 OR 11	BK	FL. OR	SHF	FRESH OIL/LOOSE GRAVEL (3)
W08-9	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW SHOULDER
W08-11	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	UNEVEN LANES
W08-12	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	NO CENTER LINE
W08-15	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	GROOVED PAVEMENT
W08-15p	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	MOTORCYCLE (PLAQUE)
W08-17(L)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP-OFF (SYMBOL LEFT)
W08-17(R)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP OFF (SYMBOL RIGHT)
W08-17p	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP-OFF (PLAQUE)
W10-1	42 RND.	9.62	ASTM 9 OR 11	BK	FL. YL	SHF	RAILROAD CROSSING
W012-1	24X24	4.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE DOWN ARROW (SYMBOL)
W012-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE (SYMBOL)
W012-2x	24X18	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE (PLAQUE) (3)
W012-2a	84X24	14.00	ASTM 9 OR 11	BK	FL. OR	SHF	OVERHEAD LOW CLEARANCE (FEET AND INCHES) (3)
W012-4	120X60	50.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE XX FT XX IN XX MILES AHEAD (3)
W012-5	120X60	50.00	ASTM 9 OR 11	BK	FL. OR	SHF	WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD (3)
W013-1	30X30	6.25	ASTM 9 OR 11	BK	FL. OR	SHF	ADVISORY SPEED (PLAQUE)
W016-2	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	XXX FEET (PLAQUE)
W016-3	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	X MILE (PLAQUE)
W020-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD/BRIDGE/RAMP WORK AHEAD (4)
W020-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR AHEAD
W020-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD CLOSED AHEAD
W020-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ONE LANE ROAD AHEAD
W020-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/CENTER/LEFT LANE CLOSED AHEAD (4)

- (1) SIGN DEPICTION, ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.
- (2) REFER TO THE LATEST EDITION OF MUTCD PART VI BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA FOR SIGN DEPICTION, ARROW, BORDERS AND SPACING SHALL CONFORM TO THE GUIDELINES SET FORTH IN THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.
- (3) ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.
- (4) USE OF A SUPPLEMENTAL PLATE FOR LINE 1 IS ACCEPTABLE.
- (5) PLAQUE AND APPLICABLE REGULATORY SIGN MAY BE MANUFACTURED AS ONE SIGN.
- (6) DESIGNATIONS SHF AND SH, REFER TO STD. 903.02 SHEET 1 OF 8.



GENERAL NOTES:

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA, UNLESS SPECIFIED OTHERWISE.

SIGN DIMENSIONS SHOWN ARE MINIMUM. NO ADDITIONAL  
PAYMENT WILL BE MADE IF CONTRACTORS USE LARGER  
SIGNS.

NO ADDITIONAL PAYMENT WILL BE MADE FOR PLATES.

ALL PLAQUES SHALL HAVE A BORDER. PLATES SHALL NOT HAVE A BORDER.

	<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b>  105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)
	<b>TEMPORARY TRAFFIC CONTROL DEVICES WARNING SIGNS</b>
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.	
DATE EFFECTIVE: <u>01/01/2023</u>  DATE PREPARED: <u>10/7/2022</u>	<div style="font-size: 2em; font-weight: bold; margin-bottom: 10px;">616.10BA</div> SHEET NO. <b>6 OF 9</b>

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGN	SIZE (IN.)	AREA (SQ. FT.)	SHEETING	COLOR		DESIGNATION (6)	DESCRIPTION
				SYM. LEG. BRD.	BACK- GROUND		
						WARNING SIGNS CONT.	
W020-5a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD (4)
W020-6a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/CENTER/LEFT LANE CLOSED (3)(4)
W020-7	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	FLAGGER (SYMBOL) WITH FLAGS
W021-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER WORK/SHOULDER WORK AHEAD (3)
W021-5a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/LEFT SHOULDER CLOSED (4)
W021-5b	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/LEFT SHOULDER CLOSED AHEAD (4)
W022-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BLASTING ZONE AHEAD
W022-2	42X36	10.50	ASTM 9 OR 11	BK	FL. OR	SHF	TURN OFF 2-WAY RADIO AND PHONE
W022-3	42X36	10.50	ASTM 9 OR 11	BK	FL. OR	SHF	END BLASTING ZONE
G022-1	15X21	2.19	ASTM 9 OR 11	BK	FL. OR	SHF	WET PAINT (ARROW PIVOTS) (3)
GUIDE SIGNS							
E05-1	36X48	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	GORE EXIT (3)
E05-2	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	EXIT OPEN (3)
E05-2a	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	EXIT CLOSED
G020-1	60X24	10.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD WORK NEXT XX MILES
G020-2	48X24	8.00	ASTM 9 OR 11	BK	FL. OR	SHF	END ROAD WORK
G020-4	36X18	4.50	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR FOLLOW ME - REAR VEHICLE MOUNT SIGN
G020-4a	42X30	8.75	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR IN USE WAIT & FOLLOW - STATE ROUTE SIGN
G020-4a	18X12	1.50	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR IN USE WAIT & FOLLOW - NON-STATE ROUTE SIGN
G020-5aP	36X24	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	WORK ZONE (PLAQUE) (3)(5)
M04-8a	24X18	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	END DETOUR
M04-9L	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (LEFT ARROW)
M04-9R	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (RIGHT ARROW)
M04-9P	48X12	4.00	ASTM 9 OR 11	BK	FL. OR	SHF	STREET NAME (PLAQUE)
M04-10L	48X18	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (ARROW LEFT)
M04-10R	48X18	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (ARROW RIGHT)
REGULATORY SIGNS							
R1-1	48X48	13.25	ASTM 4	WH	RD	SH	STOP
R1-2	48 TRI.	6.93	ASTM 4	RD	WH	SH	YIELD
R1-2a	36X36	9.00	ASTM 4	BK	WH	SH	TO ONCOMING TRAFFIC (PLAQUE)
R1-3p	30X12	2.50	ASTM 4	WH	RD	SH	ALL WAY (PLAQUE)
R2-1	36X48	12.00	ASTM 4	BK	WH	SH	SPEED LIMIT XX
R3-1	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00	ASTM 4	BK	WH	SH	NO TURNS
R3-4	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO U-TURN (SYMBOL)
R3-7L	30X30	6.25	ASTM 4	BK	WH	SH	LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25	ASTM 4	BK	WH	SH	RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00	ASTM 4	BK	WH	SH	DO NOT PASS
R4-2	36X48	12.00	ASTM 4	BK	WH	SH	PASS WITH CARE
R4-7a	36X48	12.00	ASTM 4	BK	WH	SH	KEEP RIGHT (HORIZONTAL ARROW)
R4-8a	36X48	12.00	ASTM 4	BK	WH	SH	KEEP LEFT (HORIZONTAL ARROW)
R5-1	30X30	6.25	ASTM 4	RD	WH	SH	DO NOT ENTER
R5-1a	36X24	6.00	ASTM 4	WH	RD	SH	WRONG WAY
R6-1L	54X18	6.75	ASTM 4	BK	WH	SH	ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75	ASTM 4	BK	WH	SH	ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00	ASTM 4	BK	WH	SH	ONE WAY (LEFT)
R6-2R	24X30	5.00	ASTM 4	BK	WH	SH	ONE WAY (RIGHT)
R9-9	24X12	2.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED
R9-11L	24X18	3.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R9-11R	24X18	3.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R10-6	24X36	6.00	ASTM 4	BK	WH	SH	STOP HERE ON RED (45° ARROW)
R11-2	48X30	10.00	ASTM 4	BK	WH	SH	ROAD CLOSED
R11-3a	60X30	12.50	ASTM 4	BK	WH	SH	ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	ASTM 4	BK	WH	SH	ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00	ASTM 4	BK	WH/ FL. OR	SH	FINE SIGN (3)
CONST-3X	56X12	4.67	ASTM 4	BK	WH	SH	SPEEDING/PASSING (PLATE) (3)
MISCELLANEOUS SIGNS							
CONST-5	48X36	12.00	ASTM 4	WH	BL	SH	POINT OF PRESENCE
CONST-5	96X48	32.00	ASTM 4	WH	BL	SH	POINT OF PRESENCE
CONST-7	72X36	18.00	ASTM 4	WH/BK	BL/FL. OR	SH	RATE OUR WORK ZONE
CONST-7	48X24	8.00	ASTM 4	WH/BK	BL/FL. OR	SH	RATE OUR WORK ZONE
CONST-8	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	WORK ZONE NO PHONE ZONE

- (1) SIGN DEPICTION, ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.
- (2) REFER TO THE LATEST EDITION OF MUTCD PART VI BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA FOR SIGN DEPICTION. ARROW, BORDERS AND SPACING SHALL CONFORM TO THE GUIDELINES SET FORTH IN THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.
- (3) ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.
- (4) USE OF A SUPPLEMENTAL PLATE FOR LINE 1 IS ACCEPTABLE.
- (5) PLAQUE AND APPLICABLE REGULATORY SIGN MAY BE MANUFACTURED AS ONE SIGN.
- (6) SHF AND SH DESIGNATIONS, REFER TO STD. 903.02 SHEET 1 OF 8.

GENERAL NOTES:

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA, UNLESS SPECIFIED OTHERWISE.

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



STATE OF MISSOURI  
TRAVIS D. KOESTNER  
NUMBER PE-30042  
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN  
SIGNED, SEALED AND DATED  
ELECTRONICALLY.

TEMPORARY  
TRAFFIC CONTROL DEVICES  
WARNING, GUIDE  
AND REGULATORY SIGNS

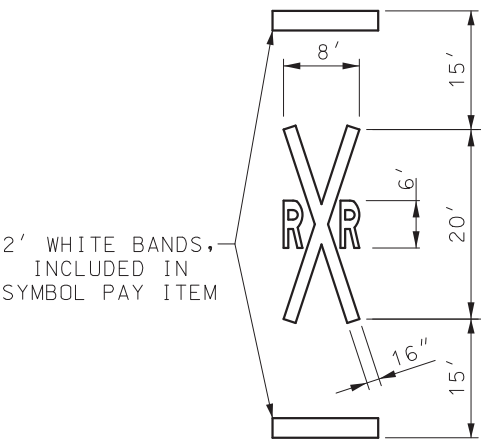
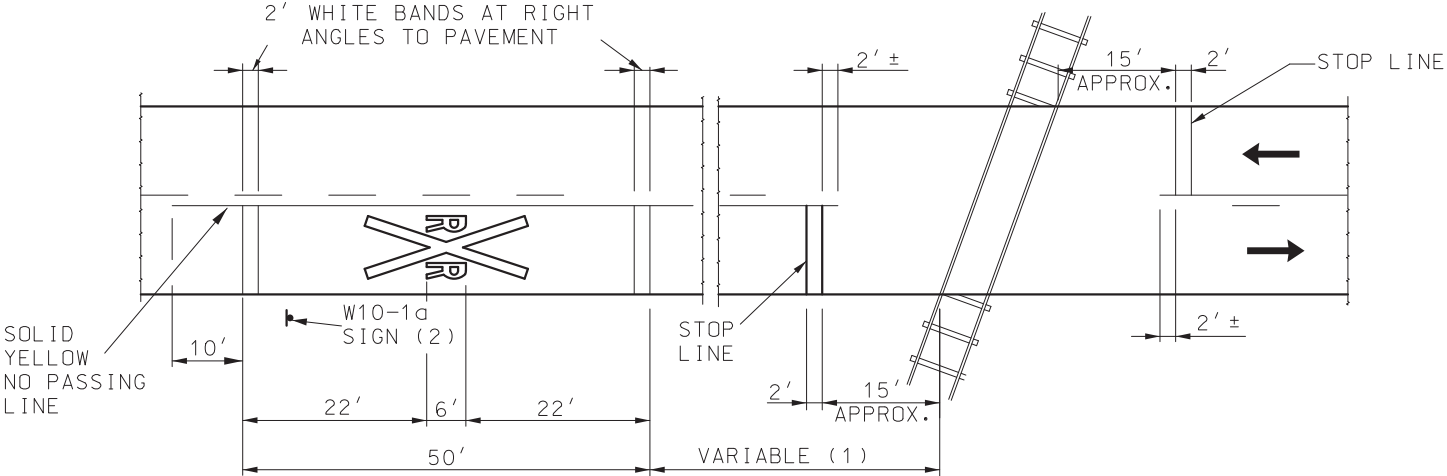
DATE EFFECTIVE: 01/01/2023  
DATE PREPARED: 10/7/2022

616.10BA

SHEET NO.  
7 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

1. STOP LINES SHALL BE PLACED 90° TO THE ROADWAY.  
2. IF RAILROAD GATE IS PRESENT THE STOP LINE SHALL BE 8' FROM GATE.

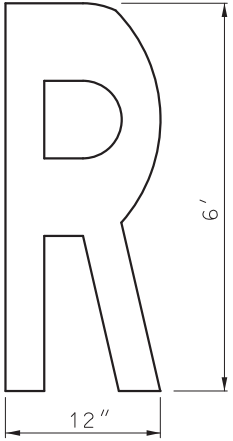


SYMBOL DETAIL

PAVEMENT DETAIL

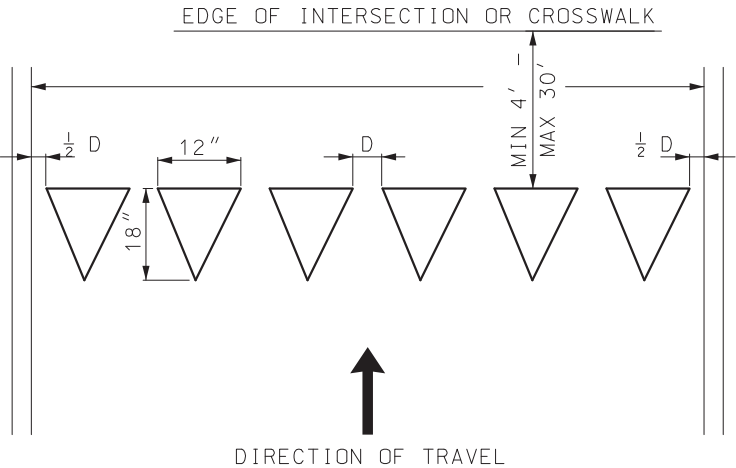
- (1) THE DISTANCE FROM THE RAILROAD CROSSING MARKING TO THE NEAREST TRACK WILL VARY ACCORDING TO THE APPROACH SPEED AND THE SIGHT DISTANCE OF THE VEHICULAR TRAFFIC APPROACHING, BUT SHALL BE NO LESS THAN 50 FEET.  
A THREE-LANE ROADWAY SHALL BE MARKED WITH A CENTERLINE FOR TWO-LANE APPROACH OPERATION ON THE APPROACH TO A CROSSING. ON MULTI-LANE ROADWAYS THE TRANSVERSE BANDS SHALL EXTEND ACROSS ALL APPROACH LANES, AND INDIVIDUAL "R X R" SYMBOLS SHALL BE USED IN EACH APPROACH LANE.

- (2) PLACEMENT OF W10-1a SIGN BY OTHERS.



LETTER DETAIL

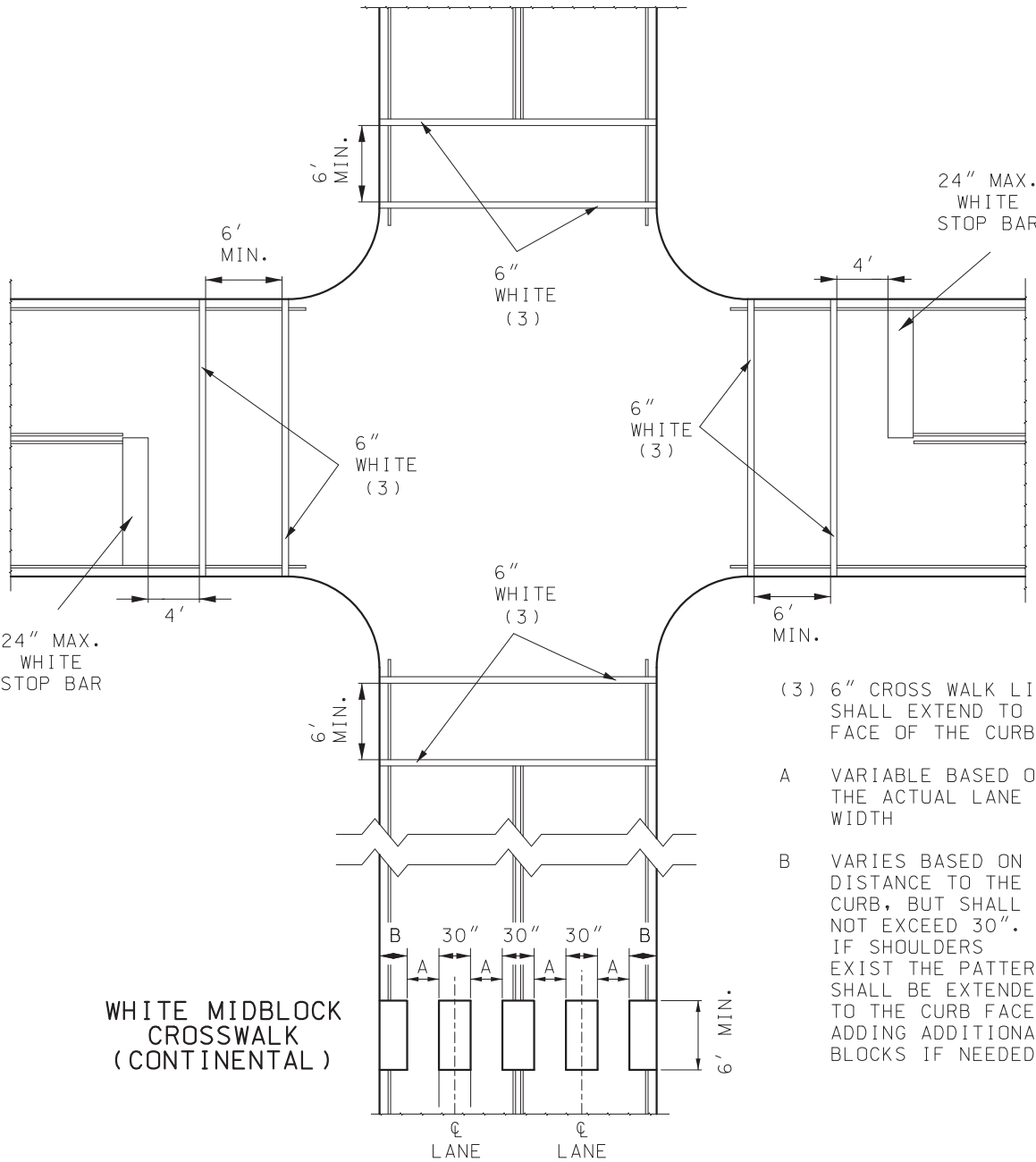
RAILROAD GRADE CROSSING



WHITE YIELD LINE TRIANGLES



$D = 3'' \text{ TO } 12''$

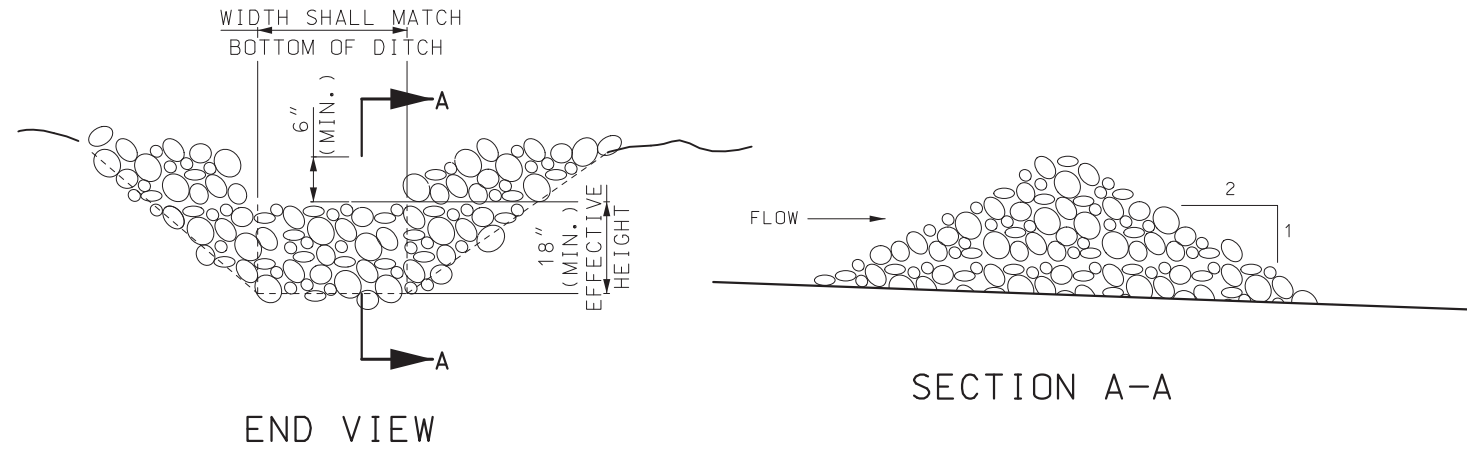
TRIANGLES SHALL BE UNIFORMLY SPACED AND COVER THE COMPLETE WIDTH OF THE TRAVEL LANE. SPACING SHALL BE ADJUSTED SO THERE ARE NO PARTIAL TRIANGLES WITHIN THE YIELD MARKING.



PEDESTRIAN CROSSWALKS

- (3) 6" CROSS WALK LINE SHALL EXTEND TO THE FACE OF THE CURB  
A VARIABLE BASED ON THE ACTUAL LANE WIDTH  
B VARIES BASED ON DISTANCE TO THE CURB, BUT SHALL NOT EXCEED 30". IF SHOULDERS EXIST THE PATTERN SHALL BE EXTENDED TO THE CURB FACE ADDING ADDITIONAL BLOCKS IF NEEDED

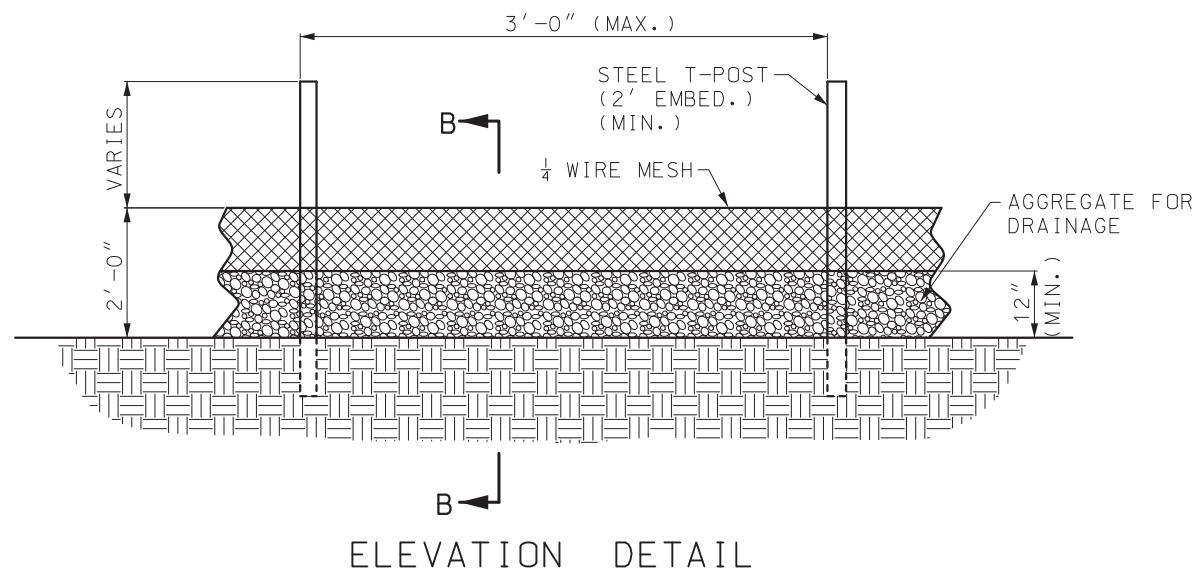
 <b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
 THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.	<b>PAVEMENT MARKING</b>
DATE EFFECTIVE: 10/01/2022 DATE PREPARED: 7/19/2022	SHEET NO. 6 OF 6



NOTE:

**SEDIMENT TRAP**

SEDIMENT TRAP IN THE CLEAR ZONE SHALL BE REMOVED OR LEVELED (IF ALLOWABLE) AFTER THE VEGETATION HAS SUFFICIENTLY MATURED TO PROTECT THE DITCH OR SWALE.



NOTES:

ROCK/MESH SEDIMENT CONTROL FENCE MAY BE NECESSARY, AS DETERMINED BY THE ENGINEER, IN ISOLATED AREAS WHERE PERIMETER SILT FENCE IS DEEMED INSUFFICIENT TO WITHSTAND SHEET FLOW. WHEN REQUIRED, IT WILL BE PAID PER LINEAR FOOT AS ROCK DITCH CHECK.

AGGREGATE FOR DRAINAGE SHALL BE IN ACCORDANCE WITH SEC 1009, GRADE 4 OR GRADE 5.

USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH 1/4 INCH MESH OPENINGS.

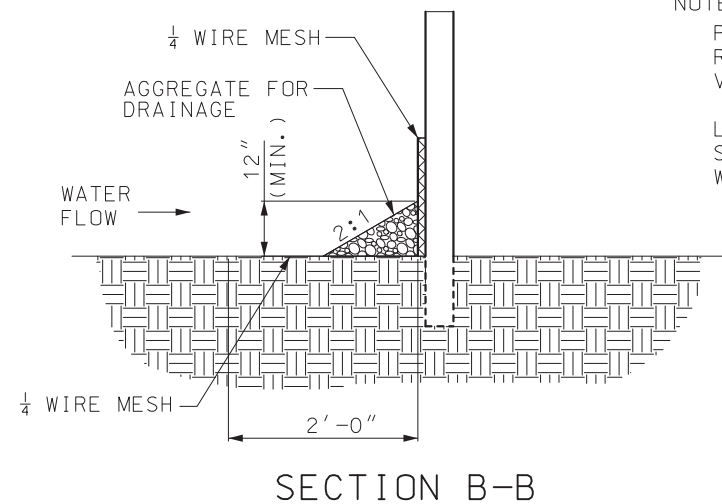
INSTALL 5 FT. T-POST WITH A 2 FOOT EMBEDMENT DEPTH (MIN.).

ATTACH HARDWARE CLOTH TO POST WITH WIRE STAPLE OR OTHER ACCEPTABLE METHODS.

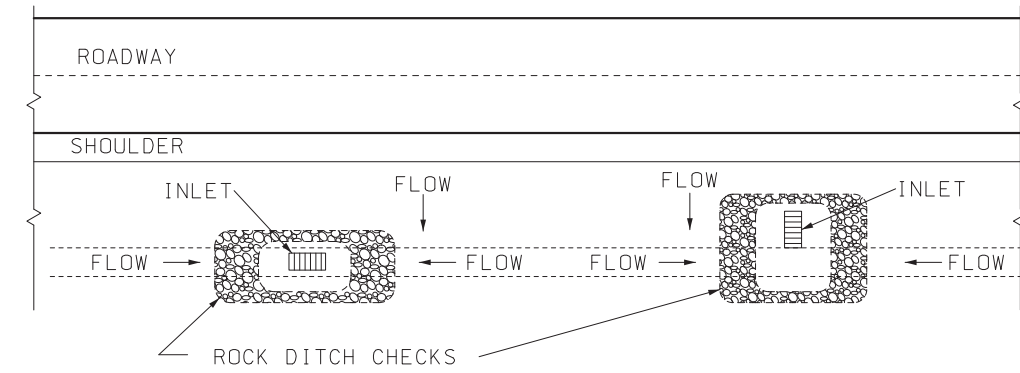
SPACE POST A MAXIMUM OF 3 FT.

FOR INSTALLATION BETWEEN SECTIONS OF SILT FENCE, EXTEND AGGREGATE FOR DRAINAGE A MINIMUM OF 12 INCHES ON EACH SIDE OF SPECIAL SEDIMENT CONTROL FENCE SECTION.

ROCK/MESH SEDIMENT CONTROL FENCE MAY BE USED IN LIEU OF ROCK DITCH CHECK TO SURROUND AN INLET, AT NO ADDITIONAL COST TO THE COMMISSION.

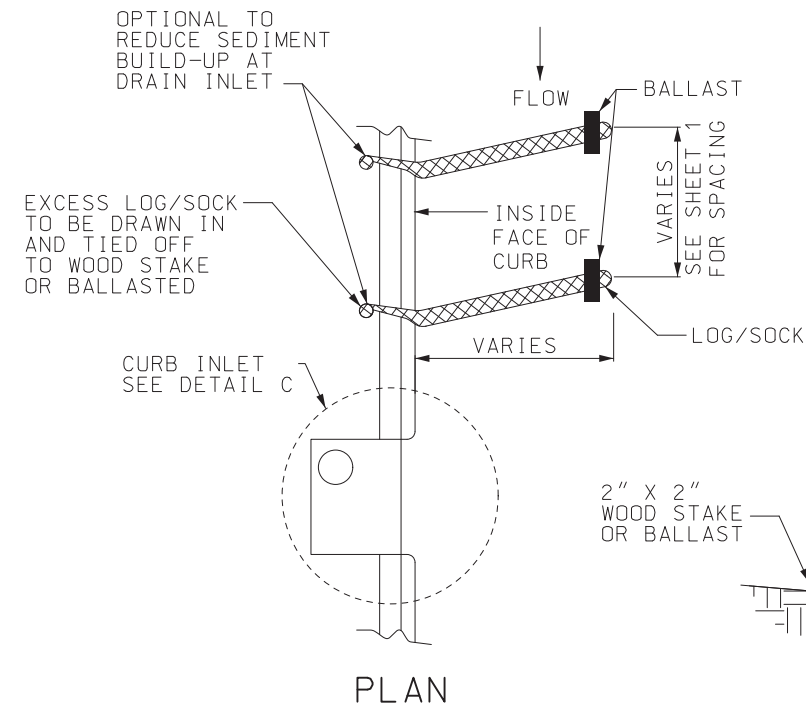


## ROCK/MESH SEDIMENT CONTROL FENCE



## DROP INLET CHECK

SEE SHEET 1 OF 6 FOR DETAILS OF ROCK DITCH CHECK.



## CURB INLET PROTECTION

NOTES:



PRIOR TO PLACEMENT ALL DEBRIS, ROCK, LARGE CLODS AND WOOD VEGETATION SHALL BE CLEARED.

LOG/SOCK PLACED ON PAVEMENT SHALL BE WEIGHTED DOWN WITH GRAVEL/SAND BALLAST.

GENERAL NOTES:

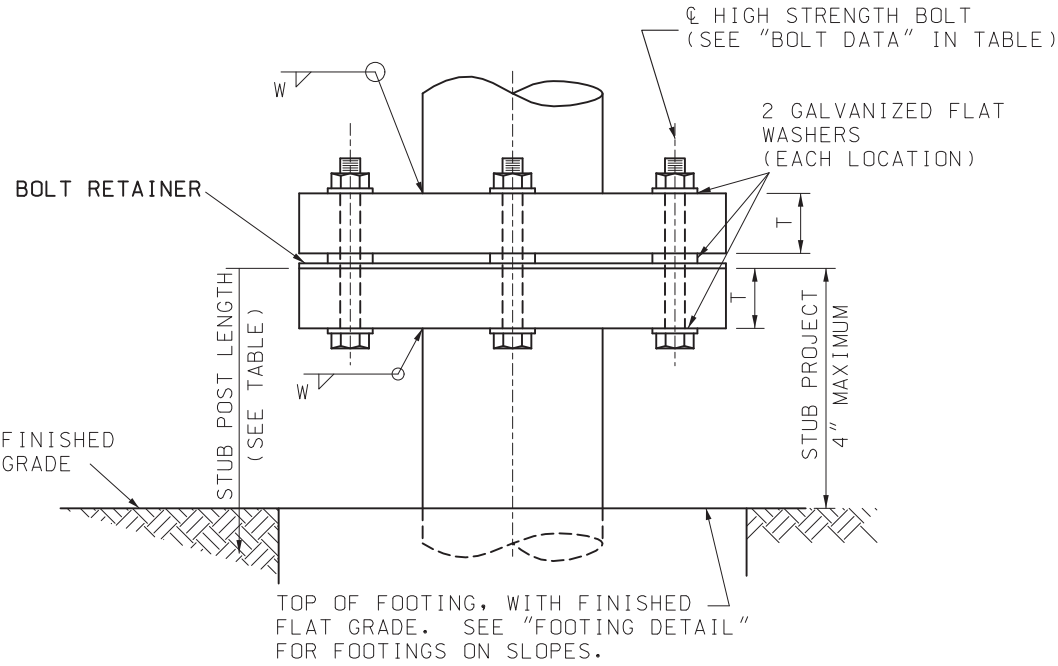
OTHER PROPRIETARY INLET PROTECTION MAY BE SUBSTITUTED IN ACCORDANCE WITH SEC 806 OR AS DIRECTED BY THE ENGINEER.

FOR SEDIMENT CONTROL SPACING SEE SHEET 1 OF 6.

 <p><b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b></p> <p>105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)</p>	
 <p>THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.</p>	<p><b>TEMPORARY EROSION CONTROL MEASURES</b></p>
<p>DATE EFFECTIVE: 01/01/2023</p> <p>DATE PREPARED: 10/11/2022</p>	<p>806.10K</p> <p>SHEET NO. 2 OF 6</p>

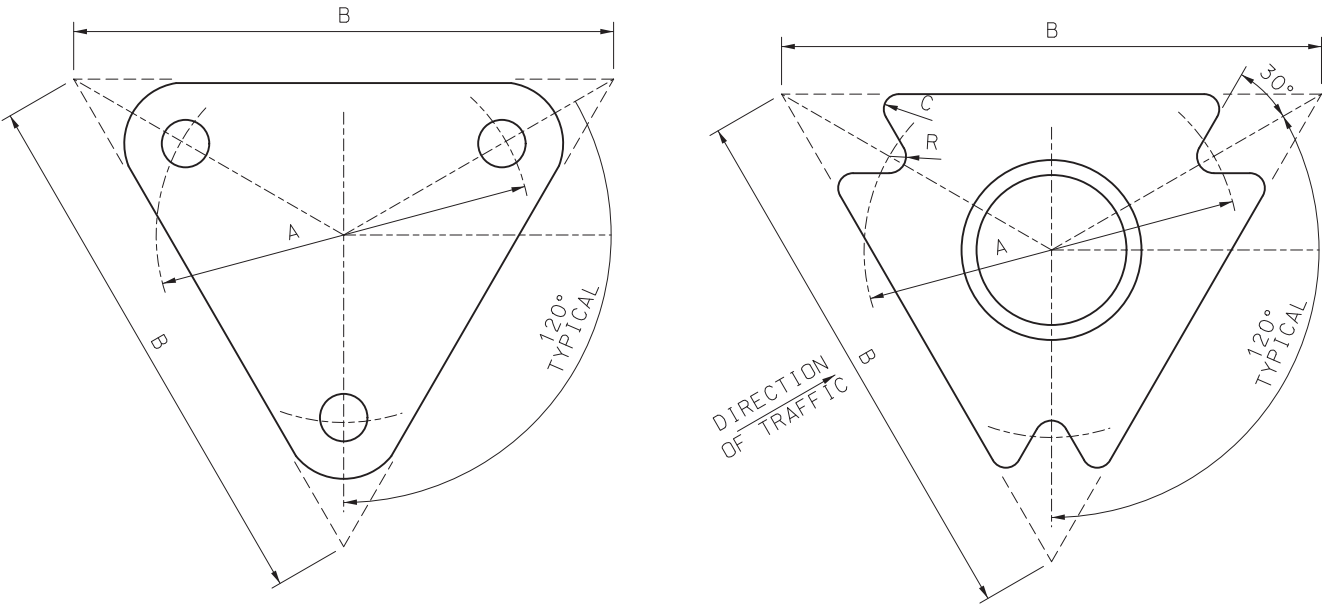
ROUND PIPE POST FOR GROUND MOUNTED SIGNS												
POST NOM SIZE (IN.-ID)	BOLT			WASHER			BASE CONNECTION DATA TABLE (IN.)					
	DIA IN.	LENGTH IN.	TORQUE IN./LB.	OD IN.	ID IN.	THICK IN.	A	B	C	R	T	W
2 1/2	1/2	3 1/2	140	1 1/16	1 7/32	1/8	6 1/4	9	1/4	9/32	1	1/4
4	5/8	3 3/4	345	1 5/16	1 11/16	1/8	7 3/16	10	1/4	3/8	1	5/16

ROUND PIPE POST AND FOOTING DATA TABLE						
NOM. SIZE (IN.)	WEIGHT		STUB LENGTH	FOOTING		CONCRETE C.Y.
	LBS/FT	LBS/IN		DIA.	DEPTH	
2 1/2	5.79	0.48	4' - 3 1/2"	12"	4'-6"	0.13
4	10.79	0.90	5' - 3 1/2"	18"	5'-6"	0.36



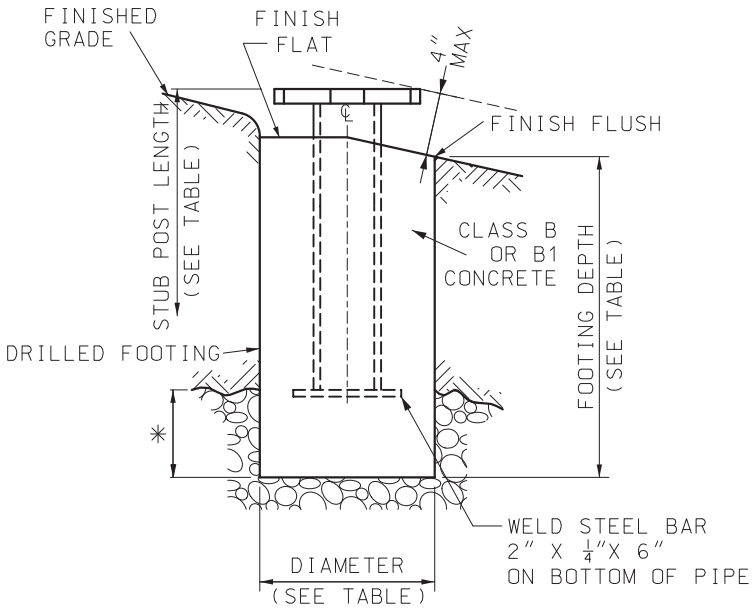
ELEVATION  
(STEEL PIPE POST BASE CONNECTION)

MULTI-DIRECTION SLIP BASE



BOLT RETAINER

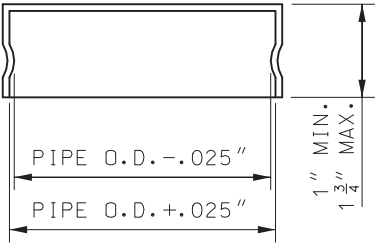
SHEET METAL BOLT RETAINER CUT FROM 30 GAUGE GALVANIZED SHEET METAL. PLACE BETWEEN BASE PLATES. SIZE VARIES TO FIT PLATE. BOLT HOLES SHALL BE 1/16" LARGER THAN REQUIRED BOLT SIZE.



\* 2' MAXIMUM IN ROCK FOR 2" DIA. PIPE;  
3' MAXIMUM IN ROCK FOR 4" DIA. PIPE.


FOOTING DETAIL

ROLLED CRIMP TO ENGAGE PIPE O.D.




FRICTION CAP

NOTE:  
FOR GENERAL NOTES, SEE SHEET 1 OF 16.  
FOR MOUNTING HEIGHT AND OFFSET DETAILS, SEE STANDARD PLANS SHEET 10 OF 16.



MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



STATE OF MISSOURI  
NICOLE A. KOLB HOOD  
NUMBER  
PE-2001018754  
PROFESSIONAL ENGINEER

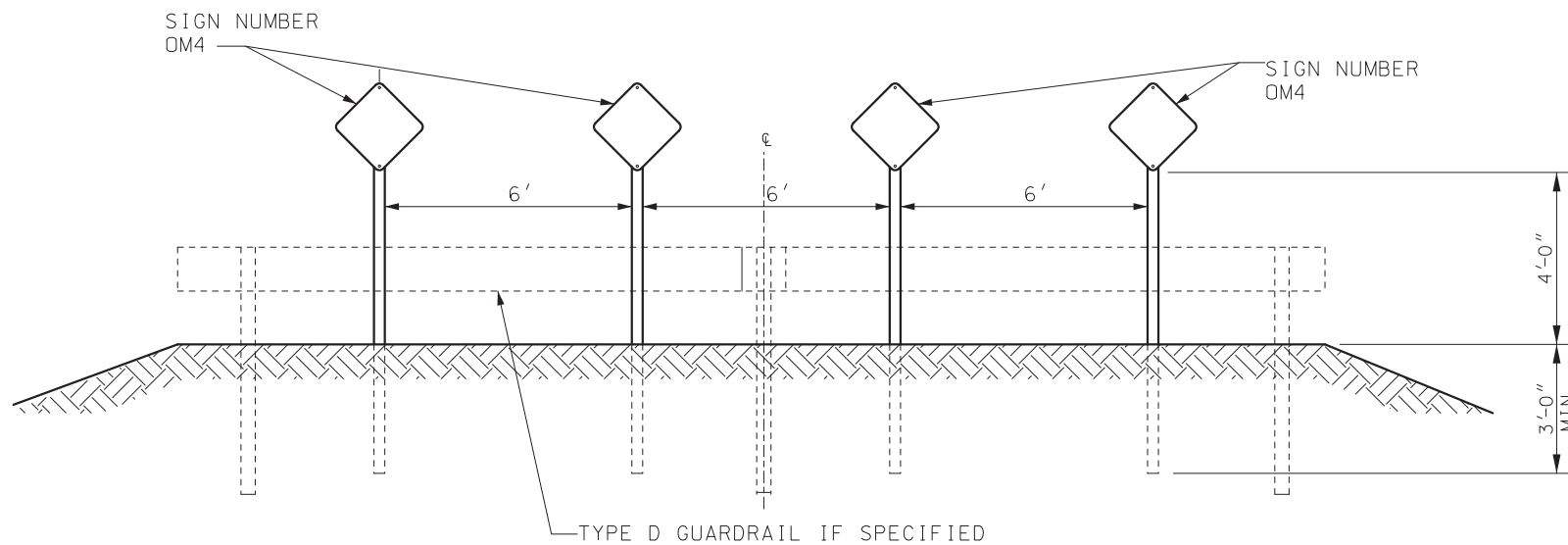
THIS SHEET HAS BEEN  
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ELECTRONICALLY.

POST INSTALLATION  
DETAILS  
  
PIPE POST

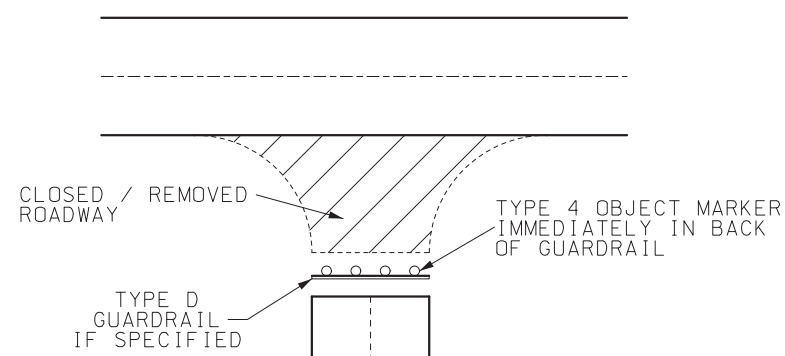
DATE EFFECTIVE: 01/01/2023  
DATE PREPARED: 11/1/2022

903.03BQ

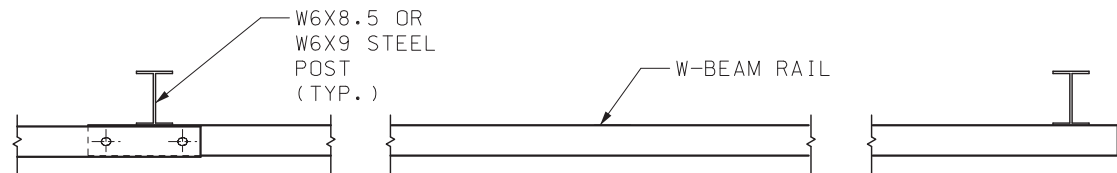
SHEET NO.  
5 OF 16



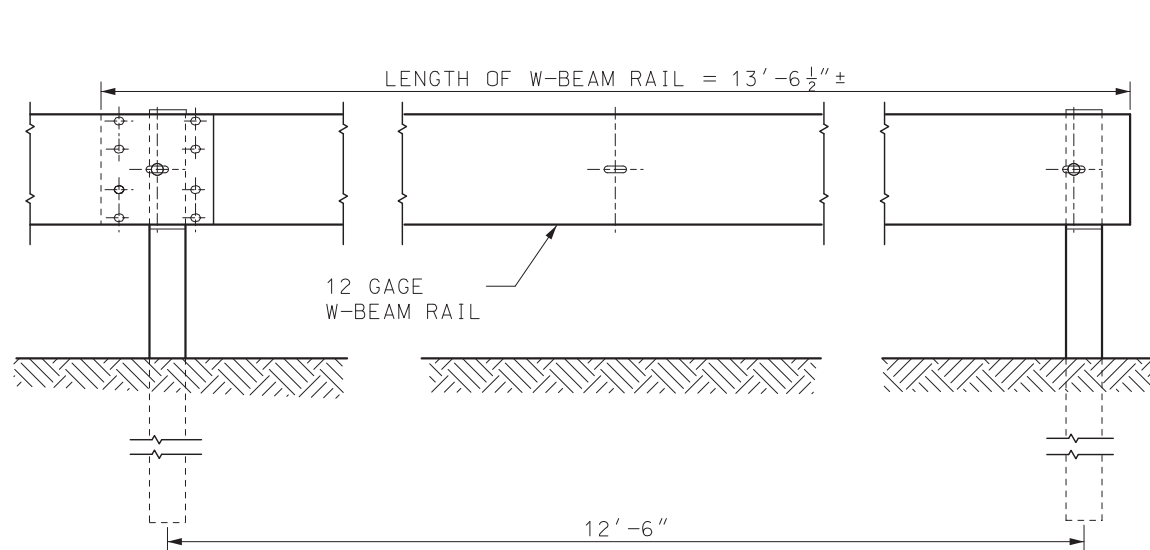
TYPE 4 OBJECT MARKER INSTALLATION



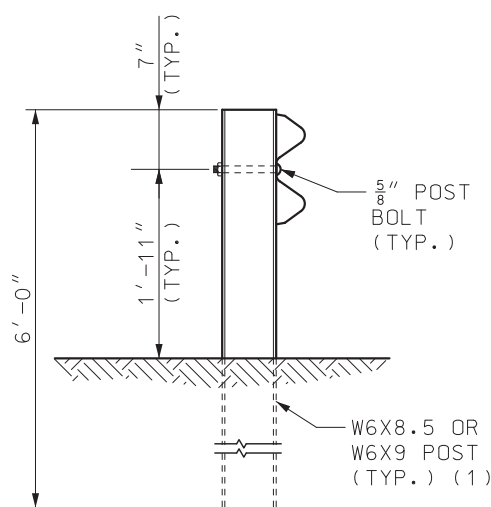
TYPICAL ROAD CLOSURE



PLAN



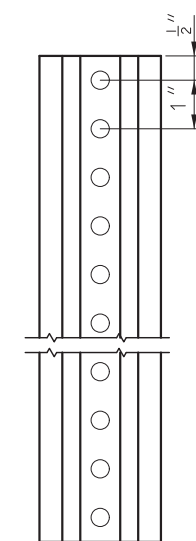
ELEVATION



STEEL POST

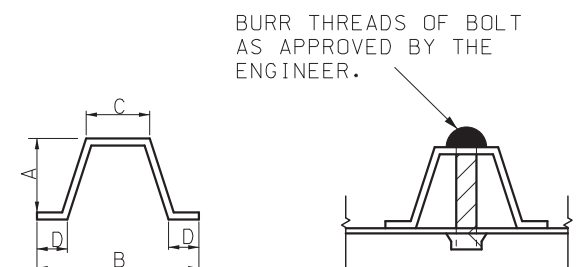
TYPE D GUARDRAIL

(1) THE CONTRACTOR MAY FURNISH EQUIVALENT SECTIONS FABRICATED FROM MATERIAL MEETING AND IN ACCORDANCE WITH SEC 1040.



STEEL OBJECT MARKER POST					
LIMITS	LBS/FT (2)	DIMENSIONS - INCHES			
		A	B	C	D
MIN.	2.40	1 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>2</sub>	1	1 <sup>1</sup> / <sub>2</sub>
MAX.	2.80	1 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>4</sub>

(2) WEIGHT BEFORE GALVANIZING OR PUNCHING. LIMITS SHOWN ARE ABSOLUTE. NO FURTHER WEIGHT, DIMENSIONAL OR COMMERCIAL TOLERANCE WILL BE ACCEPTABLE.




OBJECT MARKER POST AND FASTENER DETAILS

NOTES:

FOR GENERAL NOTES, SEE SHEET 1 OF 16.

TYPE D GUARDRAIL IS ACCESS RESTRAINT AND VISUAL TARGET VALUE ONLY. IT HAS NO REDIRECTIVE CAPABILITY.



**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

**SIGN MOUNTING DETAILS  
OBJECT MARKERS FOR  
ROAD CLOSURE**



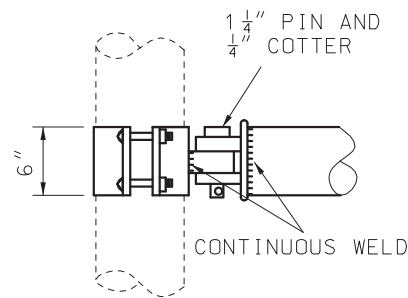
THIS SHEET HAS BEEN  
SIGNED, SEALED AND DATED  
ELECTRONICALLY.

DATE EFFECTIVE: 01/01/2023

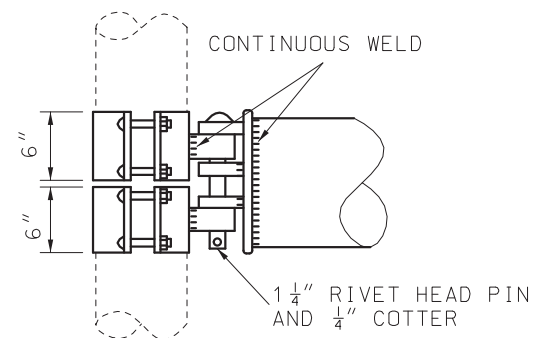
DATE PREPARED: 10/6/2022

**903.03BQ**

SHEET NO.  
15 OF 16

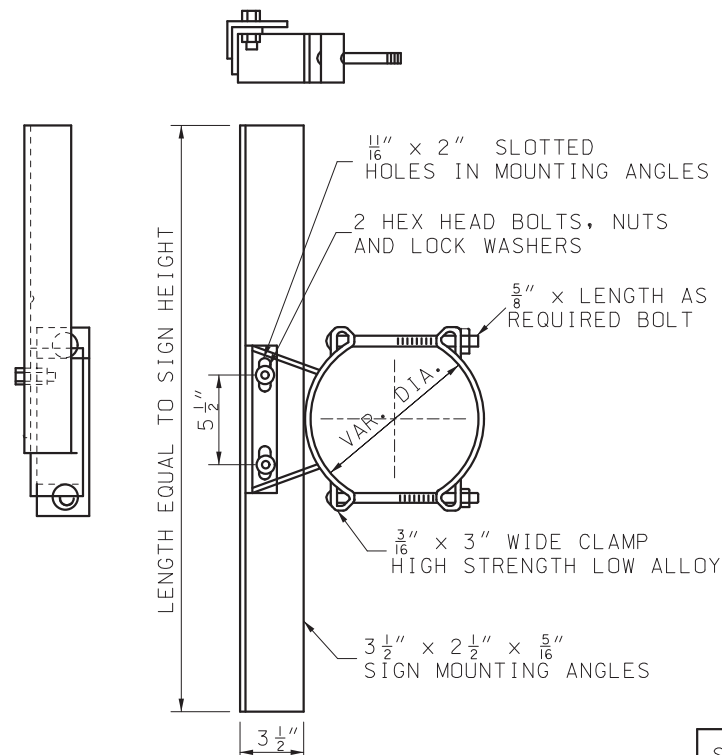


TUBE DIAMETER EQUAL TO  
OR LESS THAN 10 1/2"  
AT CENTER OF SPAN



TUBE DIAMETER GREATER THAN 10 1/2"  
AT CENTER OF SPAN

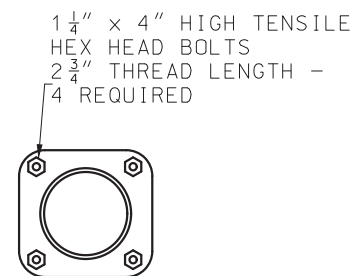
DETAIL B  
BEAM CLAMP



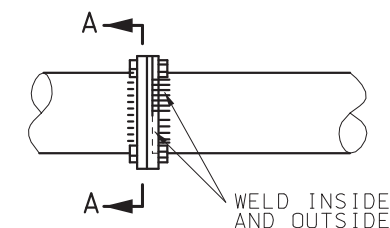
NOTE:  
MINIMUM OF TWO BRACKETS ARE REQUIRED  
FOR SIGNS OVER 42" IN LENGTH.

GALVANIZED SIGN  
BRACKET ASSEMBLY

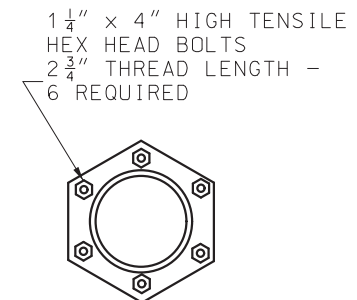
SIGN HEIGHT (INCHES)	MAXIMUM LIN. FT. OF SIGN WIDTH PER BRACKET
48 & UNDER	13
60	8
72	5



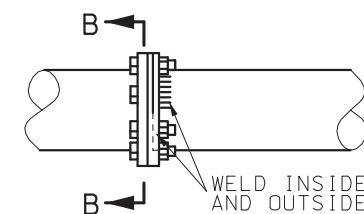
SECTION A-A



TUBE DIAMETER 9 1/2"  
AND UNDER

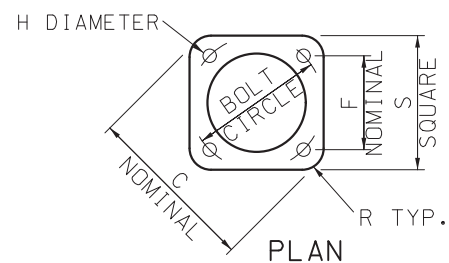


SECTION B-B

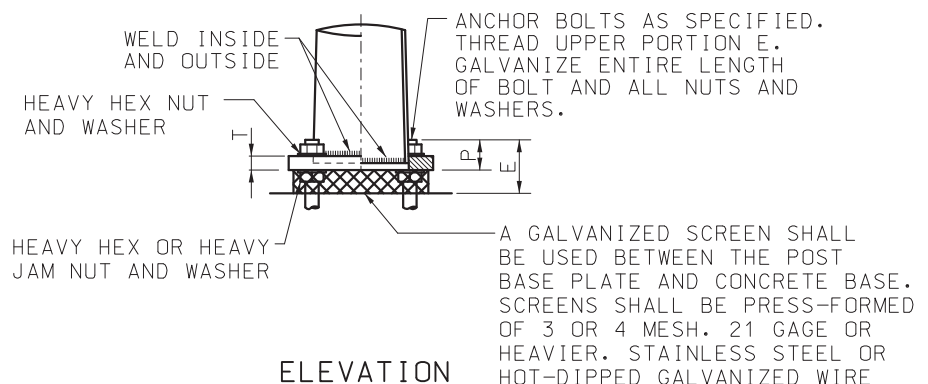


TUBE DIAMETER  
OVER 9 1/2"

DETAIL C  
BEAM SPLICE



DETAIL A  
POST BASE DETAIL



ELEVATION



MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



STATE OF MISSOURI  
NICOLE A. KOLB HOOD  
NUMBER  
PE-2001018754  
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN  
SIGNED, SEALED AND DATED  
ELECTRONICALLY.

**HIGHWAY SIGNING**

TUBULAR SUPPORT STEEL  
TYPE S  
ONE TUBE

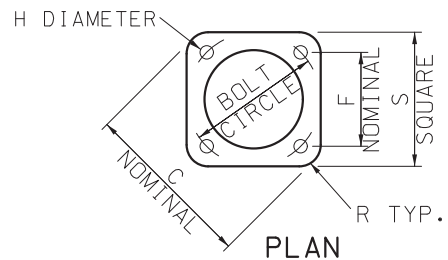
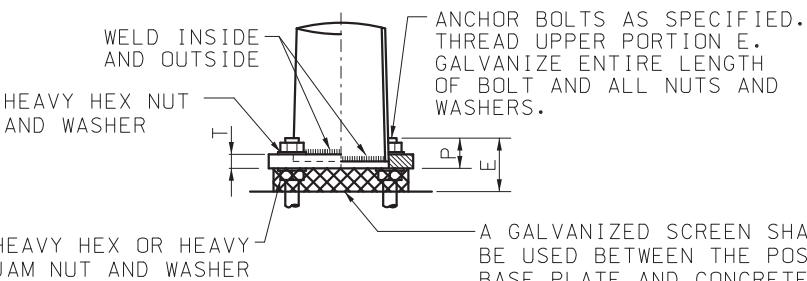
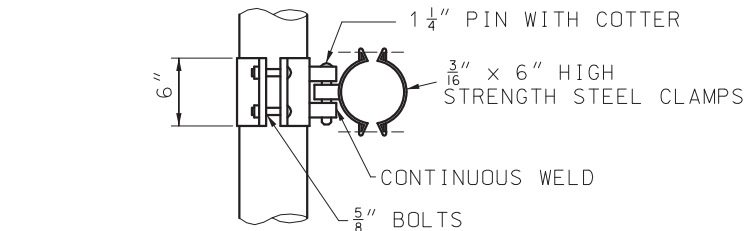
DATE EFFECTIVE: 10/01/2022	<b>903.05L</b>	SHEET NO. 2 OF 2
DATE PREPARED: 7/19/2022		

SPAN A	SPREAD IN FEET														STRUCTURE			POSTS FOR MAXIMUM AREA											
															TUBULAR BEAMS													CENTER SECTION B	
	GA	LARGE DIA.	MIN. L	THICK- NESS	O.D.	LENGTH	LENGTH OF POSTS IN FEET																						
FEET	30	35	40	45	50	55	60	65	70	75	80	85	90				18	19	20	21	22	23	24	25	26	27			
40	300													3	9.5"	20.5'	S-2315	S-2315	S-2315	S-2316.5	S-2316.5	S-2316.5	S-2318	S-2318	S-2318	S-2318			
45	264	288												3	9.5"	23.0'	S-2315	S-2315	S-2315	S-2316.5	S-2316.5	S-2316.5	S-2318	S-2318	S-2318	S-2318			
50	282	308	336											3	10.5"	25.5'	S-2315	S-2316.5	S-2316.5	S-2316.5	S-2318	S-2318	S-2318	S-27716	S-27716	S-27716			
55	238	262	284	310										3	10.5"	28.0'	S-2315	S-2316.5	S-2316.5	S-2316.5	S-2318	S-2318	S-2318	S-2318	S-27716	S-27716			
60	266	288	314	340	364									7	14.0"	30.5'	S-2318	S-27716	S-27716	S-27716	S-2018	S-27718	S-27718	S-27718	S-23316.5	S-23316.5			
65	234	256	280	304	328	352								7	14.0"	33.0'	S-2318	S-27716	S-27716	S-27716	S-27716	S-27718	S-27718	S-27718	S-23316.5	S-23316.5			
70	262	284	304	324	346	368	394							3	14.0"	35.5'	S-27716	S-27716	S-27716	S-27718	S-27718	S-27718	S-23316.5	S-23316.5	S-23316.5	S-23317			
75	228	248	268	288	308	330	352	374						3	14.0"	38.0'	S-27716	S-27716	S-27716	S-2018	S-27718	S-27718	S-27718	S-23316.5	S-23316.5	S-23316.5			
76	295	308	326	350	370	397	425	450	472	502				3	14.25"	30.5'	312"	14.238"	16'	S-27716	S-27718	S-27718	S-27718	S-23316.5	S-23316.5	S-23317	S-23317	S-20018	
79	310	326	347	366	384	410	432	460	490	520				3	14.25"	28.5'	312"	14.238"	23'	S-2018	S-27718	S-27718	S-23316.5	S-23316.5	S-23317	S-23317	S-20018	S-20018	
83	277	288	300	322	340	360	385	412	434	465	498			3	14.25"	30.5'	312"	14.238"	23'	S-27716	S-2018	S-27718	S-27718	S-23316.5	S-23316.5	S-23316.5	S-23317	S-20018	
86	297	309	322	337	356	378	402	425	447	473	500	522		3	14.25"	28.0'	312"	14.238"	30'	S-2018	S-27718	S-27718	S-23316.5	S-23316.5	S-23317	S-23317	S-20018	S-20018	
90	269	280	294	310	327	345	363	385	403	426	446	466	485	3	14.25"	30.5'	312"	14.238"	30'	S-27716	S-27718	S-27718	S-23316.5	S-23316.5	S-23316.5	S-23317	S-23317	S-20018	S-20018

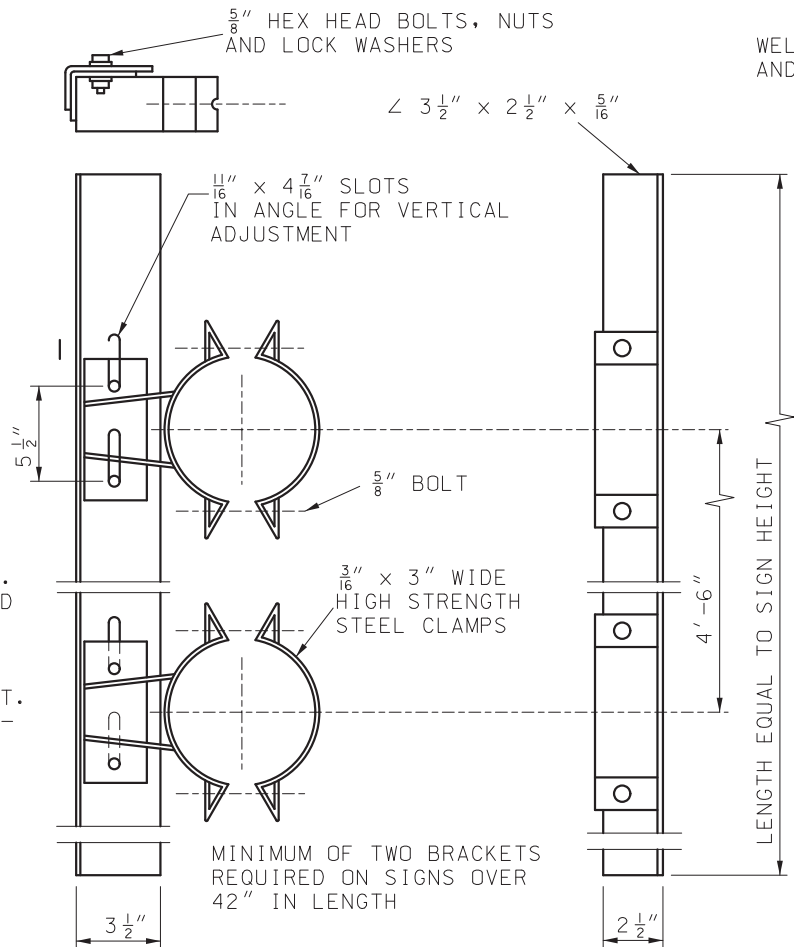
BASE DATA										FOOTINGS								ESTIMATED QUANTITIES OF STANDARD FOOTINGS						
TYPE NO.	BOLT CIRCLE	C	F	H	P	R	S	T	E	IN EARTH				IN SOLID ROCK				CLASS B CONC		REINFORCING STEEL		TOTAL		
										DIA. FD	FH	ANCHOR BOLTS		RH MAX	ANCHOR BOLTS		PLATES	CY/FT	CY/IN	#5 BARS			#4 BARS *	LBS.
												DIA.	LENGTH		DIA.	LENGTH				NO.	LENGTH		NO.	
S-2315	22"	28 <sup>5⁄8"</sup>	15 <sup>1⁄2"</sup>	2 <sup>3⁄8"</sup>	4 <sup>3⁄4"</sup>	4 <sup>5⁄8"</sup>	23"	2"	8 <sup>1⁄2"</sup>	2'-6"	8'	2"	96"	3'	2"	AS REQUIRED SEE ROCK FOOTING	3.5" x 3.5" x 0.75"	0.1818	0.01515	6	11'-9"	13	7'-2"	136
S-2316.5	23 <sup>1⁄2"</sup>	30 <sup>1⁄2"</sup>	16 <sup>5⁄8"</sup>	2"	4 <sup>3⁄4"</sup>	5"	24 <sup>1⁄2"</sup>	2"	8 <sup>1⁄2"</sup>	3'-0"	10'	2"	96"	3'	2"		3.5" x 3.5" x 0.75"	0.2618	0.0218	6	14'-0"	15	8'-9"	176
S-2318	25 <sup>1⁄2"</sup>	33"	18"	2"	4 <sup>3⁄4"</sup>	5 <sup>1⁄2"</sup>	26 <sup>1⁄2"</sup>	2"	8 <sup>1⁄2"</sup>	3'-0"	10'	2"	96"	3'	2"		3.5" x 3.5" x 0.75"	0.2618	0.0218	6	14'-0"	15	8'-9"	176
S-27716	23 <sup>1⁄2"</sup>	30 <sup>1⁄2"</sup>	16 <sup>5⁄8"</sup>	2"	5 <sup>1⁄2"</sup>	5"	24 <sup>1⁄2"</sup>	2 <sup>1⁄2"</sup>	9 <sup>1⁄2"</sup>	3'-0"	10'	2 <sup>1⁄4"</sup>	96"	3'	2 <sup>1⁄4"</sup>		4.5" x 4.5" x 0.75"	0.2618	0.0218	6	14'-0"	15	8'-9"	176
S-2018	25 <sup>1⁄2"</sup>	33"	18"	2"	5 <sup>1⁄2"</sup>	5 <sup>1⁄2"</sup>	26 <sup>1⁄2"</sup>	2 <sup>1⁄2"</sup>	9 <sup>1⁄2"</sup>	3'-6"	11'	2 <sup>1⁄4"</sup>	96"	4'	2 <sup>1⁄4"</sup>		4.5" x 4.5" x 0.75"	0.3563	0.0297	6	15'-3"	17	10'-4"	212
S-27718	25 <sup>1⁄2"</sup>	33"	18"	2"	6"	5 <sup>1⁄2"</sup>	26 <sup>1⁄2"</sup>	2 <sup>1⁄2"</sup>	10 <sup>1⁄2"</sup>	3'-6"	11'	2 <sup>1⁄2"</sup>	120"	4'	2 <sup>1⁄2"</sup>		5" x 5" x 1"	0.3563	0.0297	6	15'-3"	17	10'-4"	212
S-23316.5	23 <sup>1⁄2"</sup>	30 <sup>1⁄2"</sup>	16 <sup>5⁄8"</sup>	3"	7"	5"	24 <sup>1⁄2"</sup>	3"	12"	3'-6"	12'	3"	144"	4'	3"		5" x 5" x 1"	0.3563	0.0297	6	16'-3"	18	10'-4"	226
S-23317	25 <sup>1⁄2"</sup>	33"	18"	3"	7"	5 <sup>1⁄2"</sup>	26 <sup>1⁄2"</sup>	3"	12"	3'-6"	12'	3"	144"	4'	3"		5" x 5" x 1"	0.3563	0.0297	6	16'-3"	18	10'-4"	226
S-20018	25 <sup>1⁄2"</sup>	33"	18"	3"	7"	5 <sup>1⁄2"</sup>	26 <sup>1⁄2"</sup>	3"	12"	4'-0"	12'	3"	144"	5'	3"	5" x 5" x 1"	0.4654	0.0388	6	16'-6"	18	11'-10"	245	

\* ESTIMATED QUANTITY FOR REINFORCING STEEL IS BASED ON A 2:1 (H:V) SLOPE.

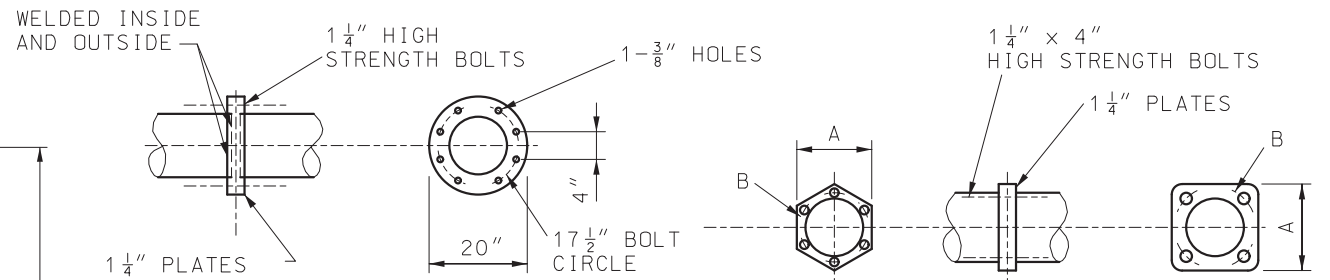
TUBE DIA.	A	B	NO. OF BOLTS
9 1/2"	11 1/2"	12 1/2"	4
10 1/2"	14 5/8"	14"	4
14.0"	17 1/4"	17"	6



DETAIL A  
POST BASE DETAIL



GALVANIZED SIGN BRACKET ASSEMBLY



SPANS 76' TO 90'

SPANS UP TO 76'

BEAM SPLICE DETAIL

SIGN HEIGHT INCHES	MAX. LIN. FT. OF SIGN WIDTH PER BRACKET
48 & UNDER	16
60	16
72	15
84	11
96	6
108	4
120	3

**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

**STATE OF MISSOURI**

NICOLE A. KOLB HOOD  
NUMBER PE-2001018754  
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

**HIGHWAY SIGNING**

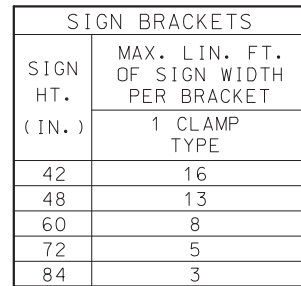
TUBULAR SUPPORT STEEL  
TYPE S  
TWO TUBES

DATE EFFECTIVE: 10/01/2022  
DATE PREPARED: 7/19/2022

**903.06L**

SHEET NO.  
2 OF 2

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



ARM = 35 000 PSI						
TYPE NUMBER	ARM DIMENSIONS		POST		MAX SIGN AREA	MAX. B WITH MAX. SIGN AREA
	LENGTH	DIA. / THK	GA	DIA.	SQ. FT.	
C-1710-12	12'	6" STD	7	10"	41	8' - 0"
C-1710-18	18'	0.280" THK				
C-1310-12	12'	6" EX HVY	3	10"	59	8' - 9"
C-1310-18	18'	0.432" THK				

$$\left( \frac{\text{MAX. B FOR TRUE SIGN AREA}}{\text{TRUE SIGN AREA}} \right) \leq \frac{\left( \frac{\text{MAX SIGN AREA}}{\text{AREA}} \right) \times \left( \frac{\text{MAX. B WITH MAX. SIGN AREA}}{\text{SIGN AREA}} \right)}{\left( \text{TRUE SIGN AREA} \right)}$$

**ELEVATION**

DETAIL A (SEE SHEET 2 OF 2)

HAND HOLE

12"

10"

4' MIN.

3"

CURB OR SHOULDER LINE

MAXIMUM PAVEMENT ELEVATION

2' - 6" +6" - 3"

ANCHOR BOLTS

6-#5 BARS EQUALLY SPACED

HALF FH

3"

12"

3"

FD

FH

#4 BARS AT 12" CTRS. SHAPE 34

**PLAN**

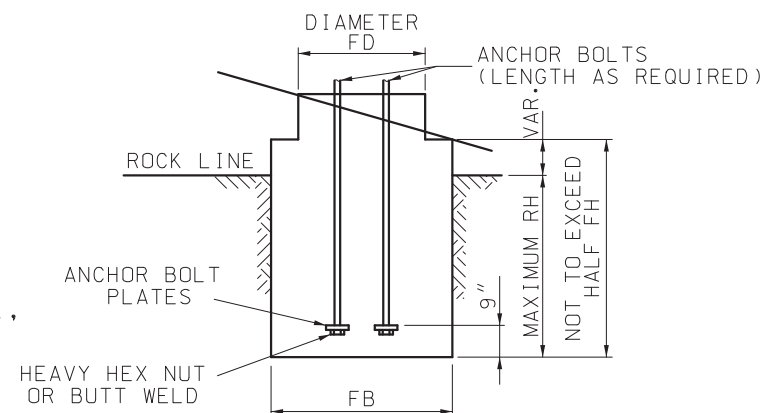
#4 BARS AT 12" CTRS., SHAPE 34

SIX - #5 BARS EQUALLY SPACED

3"

FB

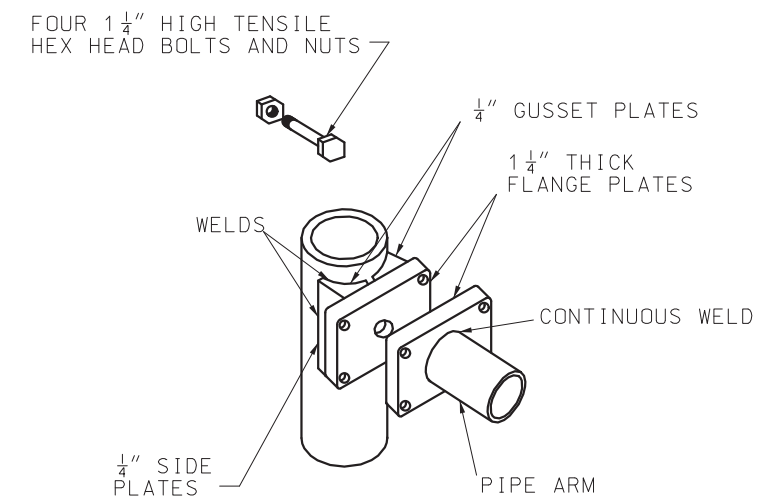
**SINGLE ARM CANTILEVER**



## MODIFIED FOOTING IN SOLID ROCK

ESTIMATED QUANTITIES											
TYPE NUMBER	DIAMETER		CU YD CLASS B CONCRETE FOOTING				REINFORCING STEEL				
			FD SECTION		FB SECTION		#5		#4 (1)		TOTAL LBS
	FD	FB	1' DEPTH	1" DEPTH	1' DEPTH	1" DEPTH	NO.	FT-IN	NO.	FT-IN	
C-1710	2'	4'	0.11635	0.0097	0.2645	0.0220	6	7'-6"	9	5'-7"	81
C-1310	2'	4'	0.11635	0.0097	0.2645	0.0220	6	7'-6"	9	5'-7"	81

MODIFIED FOOTING IN SOLID ROCK								
TYPE NUMBER	ANCHOR BOLT DIA.	ANCHOR BOLT PLATE	FOOTING			CLASS B CONCRETE FOOTING FB SECTION CU. YD.		
			RH	FD	FB	1' DEPTH	1' DEPTH	
C-1710 & C-1310	1 $\frac{1}{2}$ "	3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x 3 $\frac{3}{4}$ "	2'-6"	2'-0"	3'-0"	0.1904	0.0159	
C-2315	2"	3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x 3 $\frac{3}{4}$ "	3'-0"	3'-0"	3'-6"	0.3173	0.0264	
C-2318	2"	3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x 3 $\frac{3}{4}$ "	3'-6"	3'-6"	3'-6"	0.3563	0.0297	
C-2018	2 $\frac{1}{4}$ "	4 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ " x 3 $\frac{3}{4}$ "	3'-6"	3'-6"	3'-6"	0.3563	0.0297	



LENGTH EQUAL TO SIGN HEIGHT

$\frac{11}{16}'' \times 2''$  SLOTTED HOLES IN MOUNTING ANGLE

2'' HEX HEAD BOLTS NUTS AND LOCK WASHERS

5 1/2"

VAR


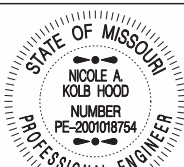
DI

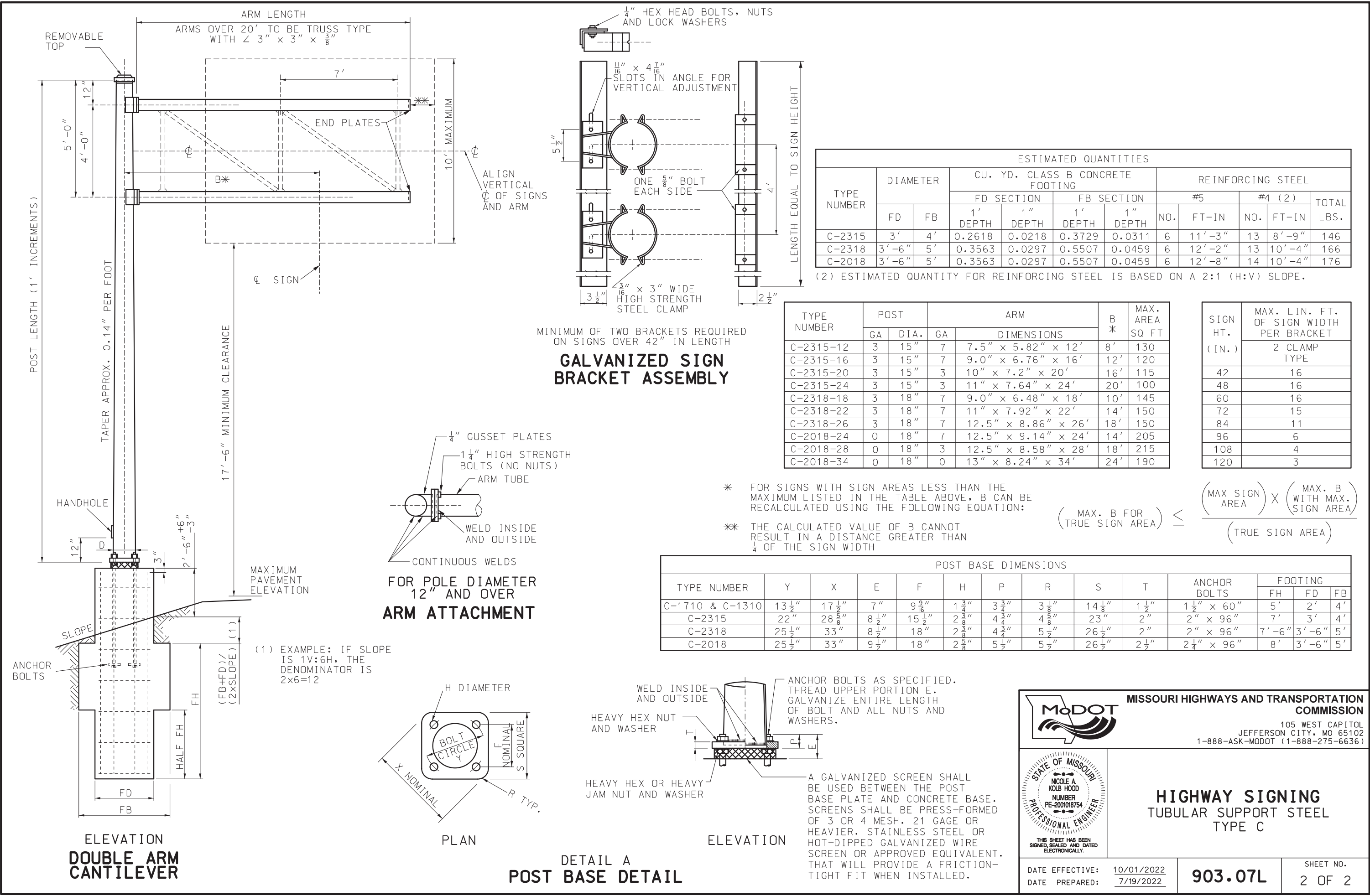
5/8" BOLTS

3/16" x 3" WIDE CLAMP HIGH STRENGTH LOW ALLOY

$\angle 3 \frac{1}{2}'' \times 2 \frac{1}{2}'' \times \frac{5}{16}''$  SIGN MOUNTING ANGLES

3 1/2"

		<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
		<h1 style="text-align: center;">HIGHWAY SIGNING</h1> <h2 style="text-align: center;">TUBULAR SUPPORT STEEL TYPE C</h2>	
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.		DATE EFFECTIVE: <u>10/01/2022</u> DATE PREPARED: <u>10/6/2022</u>	SHEET NO. <div style="font-size: 2em; font-weight: bold;">903.07L</div> 1 OF 2



MINIMUM OF TWO BRACKETS REQUIRED ON SIGNS OVER 42" IN LENGTH

**GALVANIZED SIGN BRACKET ASSEMBLY**

ESTIMATED QUANTITIES										
TYPE NUMBER	DIAMETER		CU. YD. CLASS B CONCRETE FOOTING				REINFORCING STEEL			
			FD SECTION		FB SECTION		#5		#4 (2)	
	FD	FB	1' DEPTH	1' DEPTH	1' DEPTH	1' DEPTH	NO.	FT-IN	NO.	FT-IN
C-2315	3'	4'	0.2618	0.0218	0.3729	0.0311	6	11'-3"	13	8'-9"
C-2318	3'-6"	5'	0.3563	0.0297	0.5507	0.0459	6	12'-2"	13	10'-4"
C-2018	3'-6"	5'	0.3563	0.0297	0.5507	0.0459	6	12'-8"	14	10'-4"

(2) ESTIMATED QUANTITY FOR REINFORCING STEEL IS BASED ON A 2:1 (H:V) SLOPE.

TYPE NUMBER	POST		ARM				B *	MAX. AREA SQ FT
	GA	DIA.	GA	DIMENSIONS				
C-2315-12	3	15"	7	7.5" x 5.82" x 12'			8'	130
C-2315-16	3	15"	7	9.0" x 6.76" x 16'			12'	120
C-2315-20	3	15"	3	10" x 7.2" x 20'			16'	115
C-2315-24	3	15"	3	11" x 7.64" x 24'			20'	100
C-2318-18	3	18"	7	9.0" x 6.48" x 18'			10'	145
C-2318-22	3	18"	7	11" x 7.92" x 22'			14'	150
C-2318-26	3	18"	7	12.5" x 8.86" x 26'			18'	150
C-2018-24	0	18"	7	12.5" x 9.14" x 24'			14'	205
C-2018-28	0	18"	3	12.5" x 8.58" x 28'			18'	215
C-2018-34	0	18"	0	13" x 8.24" x 34'			24'	190

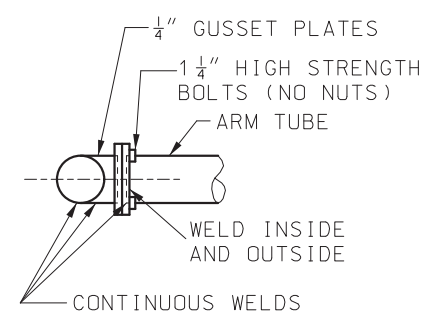
SIGN HT. (IN.)	MAX. LIN. FT. OF SIGN WIDTH PER BRACKET	
	2 CLAMP TYPE	
42	16	
48	16	
60	16	
72	15	
84	11	
96	6	
108	4	
120	3	

\* FOR SIGNS WITH SIGN AREAS LESS THAN THE MAXIMUM LISTED IN THE TABLE ABOVE, B CAN BE RECALCULATED USING THE FOLLOWING EQUATION:

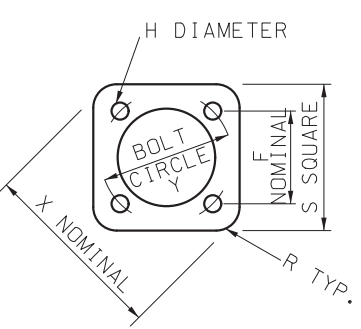
\*\* THE CALCULATED VALUE OF B CANNOT RESULT IN A DISTANCE GREATER THAN 1/4 OF THE SIGN WIDTH

$$\left( \frac{\text{MAX. B FOR TRUE SIGN AREA}}{\text{TRUE SIGN AREA}} \right) \leq \left( \frac{\text{MAX. SIGN AREA}}{\text{TRUE SIGN AREA}} \right) \times \left( \frac{\text{MAX. B WITH MAX. SIGN AREA}}{\text{TRUE SIGN AREA}} \right)$$

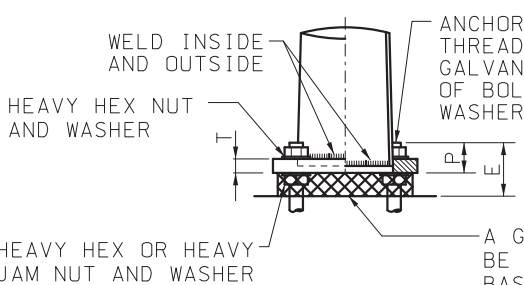
POST BASE DIMENSIONS													
TYPE NUMBER	Y	X	E	F	H	P	R	S	T	ANCHOR BOLTS	FOOTING		
											FH	FD	FB
C-1710 & C-1310	13 1/2"	17 1/2"	7"	9 9/16"	1 3/4"	3 3/4"	3 1/2"	14 1/8"	1 1/2"	1 1/2" x 60"	5'	2'	4'
C-2315	22"	28 5/8"	8 1/2"	15 1/2"	2 3/4"	4 3/4"	4 3/8"	23"	2"	2" x 96"	7'	3'	4'
C-2318	25 1/2"	33"	8 1/2"	18"	2 3/4"	4 3/4"	5 1/2"	26 1/2"	2"	2" x 96"	7'-6"	3'-6"	5'
C-2018	25 1/2"	33"	9 1/2"	18"	2 5/8"	5 1/2"	5 1/2"	26 1/2"	2 1/2"	2 1/4" x 96"	8'	3'-6"	5'



FOR POLE DIAMETER 12" AND OVER  
**ARM ATTACHMENT**




PLAN



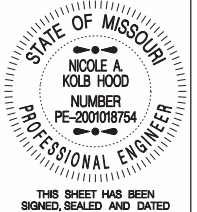
ELEVATION

DETAIL A  
**POST BASE DETAIL**



**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)



**NICOLE A. KOLB HOOD**  
NUMBER PE-2001018754  
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

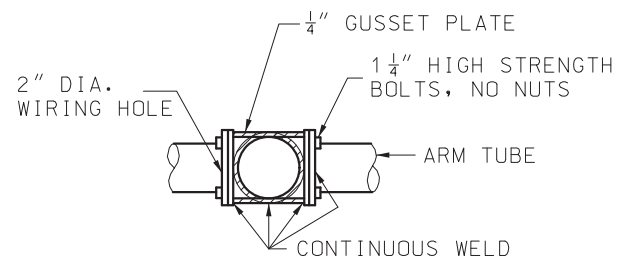
**HIGHWAY SIGNING TUBULAR SUPPORT STEEL TYPE C**

DATE EFFECTIVE: 10/01/2022  
DATE PREPARED: 7/19/2022

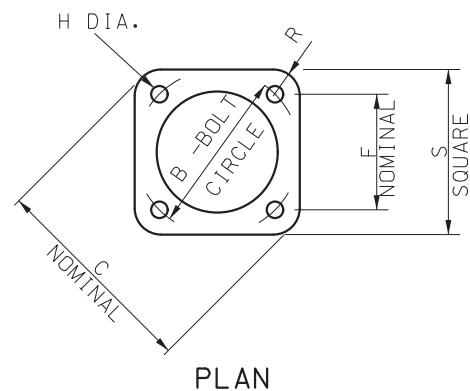
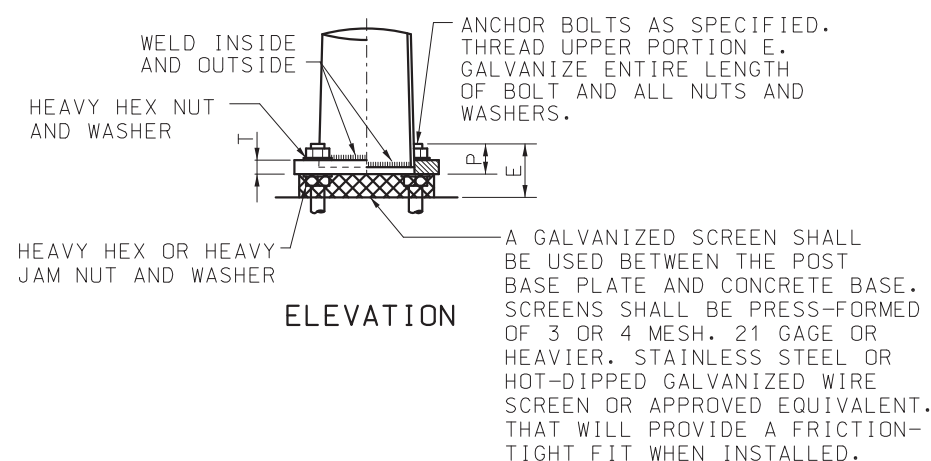
**903.07L**

SHEET NO.  
2 OF 2

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

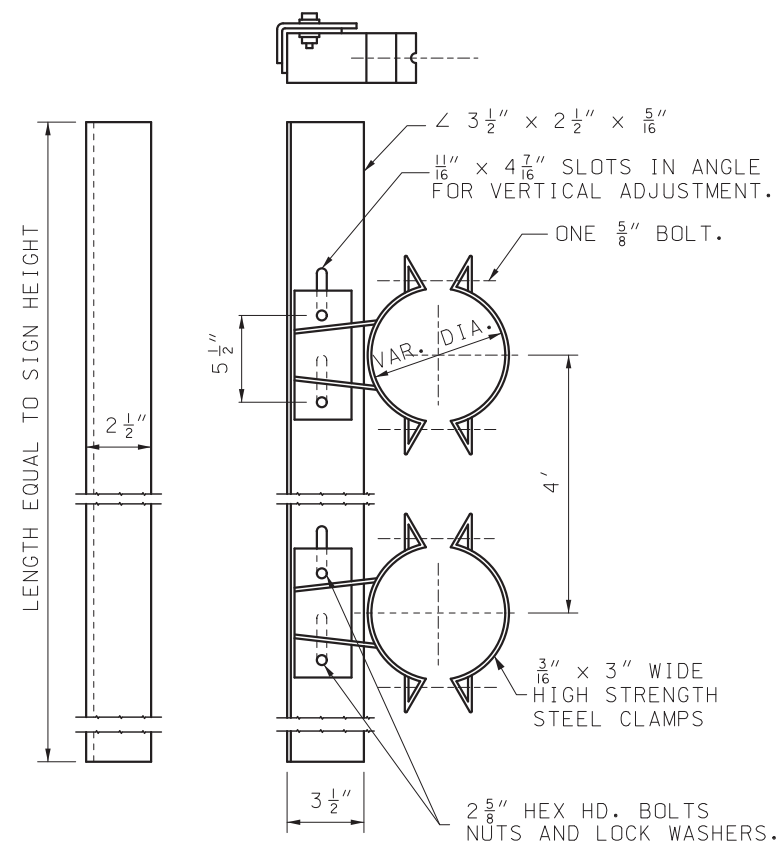


ARM ATTACHMENT DETAIL



DETAIL A  
POST BASE DETAIL


POST BASE DIMENSIONS												FOOTING		
TYPE NUMBER	B	C	F	H	S	R	P	T	E	ANCHOR BOLTS		"h"	"d"	"b"
B-2018	25 1/2"	33"	18"	2 5/8"	26 1/2"	5 1/2"	5 1/2"	2 1/2"	9 1/2"	2 1/4" x 96"		7'-6"	3'-6"	6'-0"
B-23318	25 1/2"	33"	18"	3 3/8"	26 1/2"	5 1/2"	7"	3"	12"	3" x 120"		8'-0"	3'-6"	7'-0"
B-20018	25 1/2"	33"	18"	3 3/8"	26 1/2"	5 1/2"	7"	3"	12"	3" x 120"		9'-6"	3'-6"	7'-0"



GALVANIZED SIGN BRACKET ASSEMBLY \*

SIGN HEIGHT INCHES	MAX. LIN. FT. OF SIGN WIDTH PER BRACKET
48 & UNDER	16
60	16
72	15
84	11
96	6
108	4
120	3

\* MINIMUM OF TWO BRACKETS REQUIRED ON SIGNS OVER 42" IN LENGTH



**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

**HIGHWAY SIGNING**

**TUBULAR SUPPORT STEEL**

**TYPE B**



THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

**903.08K**

SHEET NO.  
**2 OF 2**

DATE EFFECTIVE: 10/01/2022

DATE PREPARED: 7/19/2022